Universities Quarterly

VOLUME 9, NUMBER 1 NOVEMBER 1954

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PRICE Five Shillings per issue. POSTAL SUBSCRIPTION to any address or through any newsagent One Pound yearly.

Correspondence relating to subscriptions, advertisements etc. should be addressed to the Publisher.

TURNSTILE PRESS LIMITED

10 Great Turnstile, London, W.C.1.

HOLBORN 8471

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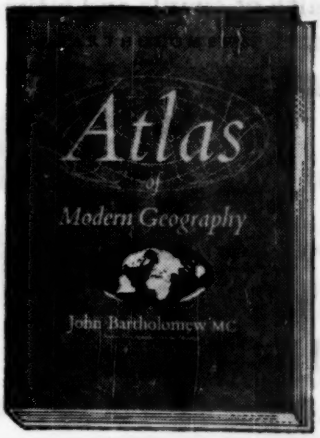

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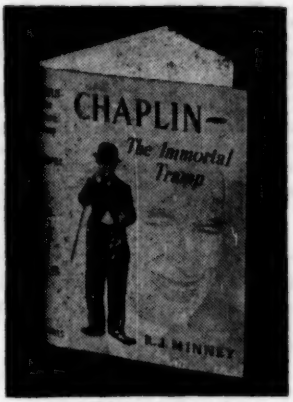

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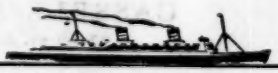

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EDITORIAL NOTES

A new General Certificate

THE establishment of the Associated Examining Board is an event of some significance. From 1955 onwards its examinations for the General Certificate of Education are likely to be taken by increasing numbers of candidates from secondary modern and technical and commercial schools. The effects upon the organization of these schools may be far-reaching, and a new attitude towards them on the part of the general public may develop. Many of the subjects made available in the new examination can be taken in all the other examinations for the G.C.E.—English and Modern Languages, for example, Religious Knowledge, Geography and History, Physics and Chemistry, Mathematics and Biology. But the syllabuses even in these will, it is promised, be 'more suitable for students intending to enter industry and commerce' than those set by the other Boards. In addition it will be possible for candidates from any part of the country to offer a considerable variety of technical subjects—Building Construction, Building Practice, Surveying, Food Science, Craft Work in Metal, Principles of Accounts, Elements of Law, among them. Many of these subjects cannot be offered in any of the other examinations—though the Northern Joint Board, it must be said, already examines in Spinning and Hand Loom Weaving, in Pottery and in Textiles. All the syllabuses in the new examination have, of course, secured the approval of the Secondary School Examinations Council.

The new Board has not yet asked that universities shall recognize passes in its examination, whether at Ordinary or Advanced level, for entrance purposes. But there can be little doubt that in due course they will be asked to give such recognition. Their answer to this request must depend on the standards demanded by the Board as minimum pass standards, especially in the first years in which it is at work. Assuming that these are high and resolute, however, the new examination may perhaps be found after ten years to have cut a path by which some good students are entering the technological faculties of our universities, men whose education at school has not

lacked calories or vitamins and who but for the new examination would not have found their way inside the walls.

Technology

The statement by the Chancellor of the Exchequer on 13 July has clarified, at least for the time being, the Government's policy in regard to expenditure on higher technological education. New developments outside London are to be supported in four centres: Glasgow, Manchester, Leeds and Birmingham. Concentration, not dispersal of effort, is evidently accepted by the Government as the right policy, given our present limited resources and given the estimated immediate need for more persons with a training in the higher technologies. There are some who still take the view that there is not enough concentration and that only a vast technological institution of university status can really do the job required. University opinion in general will probably be satisfied by the Chancellor's statement. The further development of technological education in the selected centres will face these universities with some difficult problems. The new developments must in many cases be being undertaken in advance even of the starting of the buildings which they really require. The provision of these buildings is no doubt part of a prearranged plan which it will be the policy of the Government to complete as soon as possible. Careful planning by the Grants Committee has enabled the universities to take a step forward in faith.

Philosophy of Science

Interest in the philosophy of science has been growing in recent years. A Northern Branch of the Philosophy of Science Group of the British Society for the History of Science was set up in January 1954. At the inaugural meeting in Manchester, representatives from the science and arts departments of the Universities of Leeds, Liverpool, Manchester, Sheffield and the University College of North Staffordshire were present, and it was agreed to hold meetings at the northern universities and to organize local centres where possible. Professor Dorothy Emmet was elected chairman and Dr. W. Mays honorary secretary and treasurer. The inaugural address on 'Rationalism in Antiquity' was given by Professor L. Rosenfeld; meetings have also been held at Leeds and Liverpool. The purpose of the branch is the same as that of the Philosophy of Science Group, namely to study the logic and method of science as well as of the various special

sciences, including the social sciences. The main emphasis is upon an approach through the various special sciences to the philosophy of science. But in view of the interest in the history of science in the northern universities, it is intended to devote some meetings to the historical aspects of the subject. It is hoped that the branch will help to bring members of the science and arts faculties closer together. For example, at a Manchester meeting recently Professor C. W. Wardlaw lectured on 'Goethe's Theory of Metamorphosis', and gave rise to a most interesting discussion in which biologists, German scholars, philosophers and an art-historian took part. A similar type of meeting is to be arranged in the coming session dealing with the influence of Newtonian ideas on science and art in the eighteenth century.

The Ashby Report

The report of Dr. Ashby's Committee on the organization and finance of adult education has much to say about the work of universities in this field, and says it with refreshing outspokenness. The Committee has no doubts of the high value of adult education, and welcomes the fact that the initiative in developing it lies largely with the universities, a situation it hopes will continue. It makes recommendations designed to secure greater flexibility in the use of resources, and roundly condemns the policy of indiscriminate stabilization of Ministry of Education grants which have hampered the extra-mural departments since 1952. But it does not pretend that it likes all that the departments have done in the past, and its summary of the evidence it has received from them reveals how deeply they differ from one another in both their practice and their theory. The Committee discusses the difficult question of university standards in adult education which underlies these conflicts of opinion. It recognizes its complexity, and rejects any attempt to resolve it in terms of a single factor, whether the length of courses or the status of the tutors. But it recommends, without any hedging, that university programmes should be assessed qualitatively, suggesting criteria for the purpose; and looking at recent tendencies, asks whether some departments should not impose a self-denying ordinance on themselves.

Nearly half the money expended by the universities on adult education is derived from grants paid by the Ministry of Education. A few universities recommended that this arrangement should be

ended, and that Treasury aid to extra-mural work should be included in the grants administered by the U.G.C. The Committee rejects this proposal, partly because it would make impossible the maintenance of a co-ordinated national system of adult education, partly because, in the present climate of opinion, it would not be in the interests of extra-mural work itself, which would be likely to suffer in inter-departmental competition for funds. Ministry grants, however, imply Ministry supervision. The Committee grasps this nettle firmly, and boldly recommends that extra-mural programmes shall be thoroughly examined each year by H.M.I.'s and Ministry Officers before grants are determined—at least for some time to come. Dr. Ashby and his colleagues 'see dangers in maintaining extra-mural work indefinitely as a "protected" activity in universities', and consider that sooner or later it must fight its own way for recognition and establish its right to a share of the university's finances. The report contains food for thought indeed.

Handwriting

One of the inescapable duties of most university teachers is the marking of examination scripts. At times we wonder if the handwriting of undergraduates need be so repellent, as it too frequently is, and so hard to read. There seems little universities as such can do about it; though it seems ironical that some universities should give help with speech defects while none—so far as we know—does anything to remedy defects in handwriting which are just as much obstacles to freedom and ease of expression. Fortunately, a change seems to be coming over the schools, and there is a perceptible growth of interest in the encouragement of good handwriting among adults. Pioneer work which seemed for so long to be condemned to relative obscurity is at last showing its fruits. The present revival of interest owes virtually everything to the patient work of such men and women as Edward Johnston, Marion Richardson and Alfred Fairbank. It seems reasonably well-established that the italic or chancery script is the best model. Its superiority to copperplate as a model is not merely aesthetic—this is perhaps a matter of taste: certainly it does not so swiftly degenerate into a series of squiggles and loops the significance of which can only be guessed. A time may come when it will no longer be a rare experience for the examiner to come upon a script which is both legible and handsome.

HEALTH AND THE STUDENT

I. THE STUDENT HEALTH SERVICES, THE NATIONAL HEALTH SERVICE, AND THE UNIVERSITY MEDICAL OFFICER

R. H. Bolton
Medical Officer, University of Birmingham

THE National Health Service theoretically provides 'general practitioner' treatment for everyone in the country. Those who travel can find a doctor for themselves and obtain emergency treatment, for which the fee paid is comparable with the annual capitation rate, on the ground that no traveller is likely to seek a doctor unless he needs treatment. This temporary registration system is a contract for a maximum of three months.

When, however, young people come from scattered areas to live in one place for a common purpose and are provided with many facilities, and indeed necessities and rules of life, by an institution such as a university, it is not unnatural that they should look to that institution to provide at least advice, and probably a practical service, to cover the accident of ill health. This has, of course, been recognized for years in boarding schools and in some sense in the older university cities where it has been traditional for certain practitioners to keep an eye on the members of some colleges.

But in the modern civic university the smaller initial proportion of outsiders (and perhaps one may add their unwillingness to meet private fees) together with their scatter over wide areas of suburban 'digs', prevented the development of such a tradition. With the large increase in the population of lodging-dwellers, it became increasingly felt by the university authorities that some central supervision of student health standards was a responsibility which could best be met by the addition of a medical officer to the university staff. He would undertake such duties as routine overhauls, health supervision, routine X-ray and advice on the problem student. The arrival of the National Health Service and the consequent possibility of its help in setting up an economically satisfactory treatment service, encouraged those universities already having an M.O. to expand his services to include treatment. Others, while doubtful of the value of

'health promotion', were nevertheless encouraged to try a similar comprehensive service.

This phase of rapid development in University Health Services took place immediately following the second World War and brought British universities roughly into line with the situation which had developed twenty years earlier in the United States for similar reasons. The cost of the U.S. services, however, is very much higher even on a 'per student' basis and is mostly met by a prepaid levy compounded with students' fees or subscriptions, a system which appears not to conflict with the American Medical Association's vigorous rejection of compulsory prepaid medical insurance schemes.

The cost, even here, has not been small, as many universities have had to build special consulting rooms for their M.O. besides providing him with a salary and scale of assistance commensurate with the dignity of the office. For a number of reasons this has not been fully offset by the return in capitation fees from the N.H.S. In the first place, these fees are at present reduced for a 'limited' list, on the possible ground that M.O.'s of 'institutions' have seldom to provide special premises or to do outside visits, as their patients are resident in the institution. Also, students are notoriously absent-minded in anything so mundane as changing their registration when they change their place of living. So that the University Medical Officer is carrying the sickness risk of a number of students whose registrations are with doctors they are not in a position to consult, and undertaking the immediate treatment of a large population of day-workers who find it convenient to consult him. He is also likely to be called to any accident or sudden illness on the whole university campus.

Some universities have also developed ancillary services for dental and ophthalmic care under the appropriate schemes. These have the similar purpose of offering a good standard of treatment for students who are away from home, and they enable such treatment to be organized with minimum loss of valuable time. The N.H.S. fees for this work, being based on actual services rendered, enable these developments to be economically self-supporting. The universities that, in addition, provide a most useful sick bay for minor illness do so entirely at their own cost.

Can it be said that this expansion of the supervisory university health services into the field of treatment is justified? Would it not be better to leave the students to find, perhaps with guidance, a doctor in ordinary practice to provide their treatment? Quite apart from

the waiting time that students resent, and which deters them from seeking early treatment, many U.M.O.'s have found by experience that a consultation about some minor condition or a fear of a major illness has led them to discover a source of conflict or maladjustment that is critical for the development of the student and occasionally for his life. If it is widely known that the U.M.O. does not give treatment, such cases tend to escape his notice till much later. There seems to be little doubt that tension and maladjustment are more conspicuous in, and disastrous for, students than for many others, and no opportunity should therefore be lost by U.M.O.'s who wish to contribute to the welfare of students, in seeking for every chance of early contact with the maladjusted. So often it is possible to rearrange the academic load by consultation with departments and tutors concerned, to advise on work habits, or even just to listen to the halting attempt to verbalize conflicts and thereby ease the mind. It is the early, casual, easy approach that is so valuable in these minor cases and it seems essential that the M.O. should have time, at once, to see such cases clinically; he must not therefore be overstressed either by large practice or by a full programme of routine overhauls. No one has any illusions that the treatment of these cases, psychotherapy if you wish, takes a very great deal more time than the treatment of minor organic illness and accident. Yet it is in this field that both the G.P., and the U.M.O. acting as G.P., can do the greatest good to the greatest number. Students, after all, are potential leaders of the next generation, and the pattern of development in their rather hot-house environment must be observed and absorbed by anyone who hopes to help in bringing stability to their lunatic fringe. The U.M.O. in particular knows the university staff and the work of the various departments. He can tell whether a student's load can be lightened and how this can best be done. And conversely the teaching staff find it useful to have someone they know to whom they may refer students, and whose opinion they can learn to gauge against their previous experiences. They can supply the records of a student's past and present level of achievement both in exams and in other work, which are of great value to the M.O. in assessing the student's account of himself, an account that may vary from self-deprecation to euphoria.

It is of the greatest importance that relations between the university staff and the M.O. should be honest but confidential. By this is meant that information about particular students is discussed with

staff only with the consent of the student and is confined to data of administrative importance. The maintenance of the good reputation of the health service is paramount and is not easy to sustain amongst such a critical and self-contained group as an undergraduate population. Nothing is so capable of damaging it as the knowledge that a student's affairs are subject to staff gossip however well intentioned. On the other hand, the M.O. who is in touch with students' reactions and the 'grape-vine', and is familiar with the interplay of personal factors on a student at critical moments in his career can help staff to realize that the examination marks are not perhaps the objective assessment that they sometimes appear to be, simply because they are recorded in the calligraphy of science.

Another article in this symposium is devoted to the question of the distressed student, and the matter has been brought up here only because it is the experience of many U.M.O.'s that their treatment services, whether official or casual, are a frequent source of the early detection of such distress. University Health Services seem to be developing into a novel type of organization standing between the Industrial Medical Services and the General Practitioner Service. Industry has found it economic and even profitable to ensure the prompt treatment of emergencies and the supervision of, and research into, industrial hazard and disease by employing its own M.O.'s. Any continued treatment, any treatment of non-industrial disease, is barred to them, except by specific arrangement, for the reason that employees are usually residents before they are workers. The student is far more likely to live apart from his family. The proportion not living at home actually varies (apart from Oxford and Cambridge where about 40 per cent are in lodgings) from 33 per cent at Glasgow to 60 per cent at Leeds and Birmingham. Thus the worker's common contention that while ambulant he prefers to get his treatment 'during working hours' is added to the traveller's unwillingness to consult a strange and unrecommended doctor. The sociologist who sees how extraordinarily mobile the modern family has become in the course of a single generation may well wonder if the G.P. of the future is not more likely to operate on such an occupational group rather than, as at present, a geographical one. The author once worked at the Peckham Health Centre where it was hoped to make longitudinal studies of complete families, but it was found even before the last war that no less than one-third of the population had a change of address annually. A small sample with whom

contact has been maintained over the succeeding fifteen years have become distributed not only all over the country but all over the world. The concept of a family doctor seems to be almost non-existent in the mind of the modern university student; and, it may be added, so does the idea of a doctor to supervise health as opposed to one who treats disease. It is far easier for him to regard medicine as a service laid on like a works' canteen, which he uses as long as it seems to be efficient. The limiting factor in this concept is the young family, with its far higher incidence of illness and the frequent social necessity of the doctor visiting because the mother cannot come out.

In most University Health Services which undertake treatment the M.O.'s have had occasions when the limit of their practice has been hard to define. Boy meets girl at the university and the problems facing the M.O. shade imperceptibly from the conflicts of adolescent sex and advice about marriage, to the discovery of pregnancy, arranging for delivery and the joys and troubles of parenthood. Many have accepted these extra responsibilities for a year or two in the small numbers of cases that arise, but students become research workers, some are promoted to staff, the staff have elderly relatives living with them, till the University Health Service at its fringes may become indistinguishable from general practice. When staff live close by, it seems to them to be a satisfactory arrangement to continue with the doctor who has seen them so far, but there is no denying the higher demand rate for visits: and the practice must be well organized if the primary function of keeping the student fit and at work is not to be jeopardized.

The health of the student in a 'positive' sense has usually been tackled either by way of a policy of routine overhauls or through the instigation of physical activity in some form.

The function of the routine overhaul in a section of the community which, from mortality statistics, can be regarded as a healthy one is controversial. The impression growing amongst many who see students is that a section of them are 'examined' a great deal too often. Not that this does any harm to them, but it wastes their time, and considerably reduces the possible value of overhaul in their eyes, and its significance as a likely source of useful information and advice. For the tendency in such examinations is to conduct them in a clinical manner, measuring blood-pressure and listening to heart sounds and chest noises, because such procedure is used on the sick when making a diagnosis rather than because it is useful or even likely to show

significant abnormality in the healthy. In the absence of symptoms, the chances of finding evidence of concealed disorder of a serious character without using specific tests directed to discovering that particular disorder, are remote. On the other hand, the chances of showing up some unimportant deviant are greater (e.g. functional heart murmurs) and the effect on the observer is more important than on the observed. Moreover, the purpose of the interview is often such as to preclude the possibility of time being spent on the discussion of minor troubles relevant to the student but less so to his future employer, insurance company or Government.

The use of screen tests whose cost is related to the cost of the disease it is hoped to prevent, is a more sound line of progress than the repeated use of clinical methods by doctors acting for public and private bodies concerned in the future of a young man or woman. It is not uncommon to find that a senior student of 23 or so has had six or seven routine overhauls in as many years and sometimes in as many weeks, all conducted by different doctors for different purposes (e.g. National Service, Air Ministry, local education authorities, Ministry of Education, life insurance, university, and usually ending with two or three fearsome procedures before being allowed to visit the U.S.A.). It is difficult to know how this could be reduced because no one seems willing to accept any or all of three major premises, (1) that if one doctor is satisfied, the rest should be, (2) that having got so far, the chances are the young man is likely to go further, (3) that at this age the *commonest* causes of death or disability can seldom be detected by routine overhaul. The last premise is probably valid apart from the tuberculosis risk and this can most easily be dealt with not by routine overhaul but by Mass X-ray, whose results should be acceptable to all, even the U.S.A. immigration. The other risks, of which accident, suicide and mental disturbances are the greatest, should be covered by insurance rather than examination. Tuberculosis is a diminishing risk but here the U.M.O. has two most valuable functions. He can organize the routine X-ray of all students, preferably on a compulsory basis, so that the procedure can be simple and swift: compulsion eliminates both the anxiety of the student wondering if he is being fussy, and the need for fear-promoting campaigns. He can also implement B.C.G. vaccination, which is at present proving most valuable in reducing the risk of tuberculosis in medical students and nurses and, because it involves seven to ten attendances, must be administered in a man-

ner convenient to students if it is not to waste a great deal of time. It may be that this vaccination will be best used at an earlier age than the university, but at present might well be extended to all students.

The function of the routine overhaul in many universities has been rather to enable the M.O.'s to conduct a friendly interview with the student and establish a framework in which the student can feel that there is someone, apart from the academic staff, to whom he can turn. It is also a useful opportunity for collecting data which may ultimately throw light on the selection of students or on factors creating stress in their environment. This form of research is in its infancy in this country but may in time be fruitful.

The Health Service at each university in this country is different, as development has been co-ordinated only in the loosest possible way through the Vice-Chancellors' Committee and personal contact between the medical officers, who now have an annual conference. At some there is a comprehensive service of compulsory routine overhauls and X-rays, treatment under the National Health for students, staff and families, including dental and opthalmic clinics, others have voluntary overhauls and X-rays only and no treatment is given. Some have supervision available on a scale comparable to industrial work, whilst in others there is really no organized service at all, apart from an initial report by the students' home doctor. The M.O.'s may be either full-time or part-time.

There is a similar wide variation in the U.S.A., but there the 'upper limit' would appear to English eyes to be luxurious; the larger State universities such as Minnesota, Michigan and California (Berkeley) have large hospital-type buildings with perhaps 100 fully staffed beds, 50 consulting rooms or more and everything can be treated short of chronic illness. But, it must be remembered, the enrolment of these universities is of the order of 20,000 students, and their health problems become those of a small town in consequence. This is especially the case where the university is somewhat larger than the town in which it is situated, as at Ann Arbor (Michigan). The smaller but older private universities frequently have as comprehensive a scheme on a smaller scale, but its organization may vary from a long-established university-staffed centre with a strong psychiatric unit (e.g. Yale) to a working arrangement with a comprehensive local clinic which contracts for the medical care of students (as at Stanford).

It would seem to be part of the liberal university tradition that the development of its health services should partake of the same lack of uniformity as its other functions, and it is accordingly the hope of the present writer that ideas expressed in this article will be regarded only as his opinions and not as the policy either of the university he has the honour of serving or of University M.O.'s in general.

II. THE HISTORY OF STUDENT HEALTH SERVICES IN GREAT BRITAIN

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STUDENT HEALTH SERVICES were originally developed during the last century in certain universities and colleges in the United States of America. Amherst College claims to have been the pioneer in this field, having established a Department of Physical Education and a Medical Service for routine medical examination and for the care of sick students in 1861. The University of California built a large Students' Infirmary at Berkeley in 1907 and, thereby, set the pattern for Student Health Services in America before the First World War. Between the wars Doctors H. S. Diehl and Ruth E. Boynton promoted a Health Service in the University of Minnesota which has served as an example to other such services: they declared the objects of their Student Health programme in these words: 'The ultimate purpose of a student health programme is to produce in students scientific attitudes, sentiments, judgments, and habits in relation to health and thus secure through the potential influence of the student the promise of an ultimately better and more scientific public opinion in matters of health and a greater rationality in the customs, institutions and laws that relate to health. Directly the Health Service hopes to accomplish the improvement of the physical and mental health of students, the prevention of disease among the student body, and the instruction of students in regard to the essentials of healthful living. We believe that the most effective way of doing this is to provide for students a health programme that is as nearly ideal as possible. This means that the Service must be of the very highest quality; thorough, complete, and efficient in every aspect.'

In the American universities the introduction of Physical Education as part of the educational programme and the assessment of under-

graduates' fitness for military training precipitated the development of the Medical Services. Similarly in Great Britain, after the bitter experiences of the First World War in which our dire need had been for manpower—and yet only six out of every ten young men were found fit to take their station in the front line—the demand for physical education and, with it, medical inspection began to exercise the thoughts of those who controlled the destinies of our ancient universities. Nevertheless, it was not until 1925 that Dr. J. G. Adami, Vice-Chancellor of Liverpool University, launched the first appeal for 'Physical Training and Medical Supervision of University Students' at the Annual Conference of the Universities of Great Britain and Ireland. In this address he called for:

1. 'The appointment of a well qualified Director of Physical Training with qualified staff in every university and university college.'

2. 'The erection of a spacious gymnasium at each university, and the provision of a swimming bath, shower baths and dressing rooms, there being no sport which calls into harmonious and simultaneous play a greater number of muscles than does swimming.'

3. 'To make it obligatory that every student during at least the first two years of university life shall spend not less than two hours a week over some form of physical exercise, either directed by, or approved by, the Director of Physical Training.'

4. 'The appointment of a Medical Director and to make it compulsory that all students, men and women, upon entrance to the university present themselves for a physical examination—compulsory, just because it is those who possess poor physique, and who most need advice and guidance, that are most unwilling to disclose their unfitness; and after entrance, rather than before, because there is no idea of rejection on account of physical disability.'

That this eloquent appeal was not unheeded was shown by the fact that one of the principal subjects discussed at the Congress of the Universities of the British Empire, in London the following year, concerned physical education of students. That the subject was then being regarded as one of considerable importance is clear. Sir Charles Grant Robertson, Vice-Chancellor of the University of Birmingham, said: 'I am very anxious that we should as universities affirm the principle that we are responsible quite as much for the physical welfare of our students as for their intellectual and moral welfare. We want to see that principle accepted as one which is no longer in

dispute.' Dr. Adami, speaking again on this occasion, said: 'Our British universities must provide no longer a one-sided but an all-round education directed to the due development of body and mind alike.' Many speakers spoke in favour of these views, but there were some dissenting voices: in particular the Vice-Chancellor of the University of Leeds, who said: 'The university does not exist to ensure adequate physical training or health: it exists primarily for the purpose—call it medieval if you like—of training the intellect in the pathway of truth: everything else is subordinate.' It is gratifying to know that less than thirty years later the University of Leeds possesses one of the outstandingly good Student Health Services in this country!

The Vice-Chancellor of the University of Edinburgh, Sir Alfred Ewing, being a firm supporter of the views expressed by Dr. Adami, appointed, on 25th October 1926, a Committee under the Chairmanship of Lord Constable to consider and report on 'The Question Generally of the Provision of Facilities for Student Athletic Activities and their Adequate Supervision' in the University of Edinburgh. The Constable Report, published on 13th June 1927, confirmed the recommendations made by Dr. Adami with the exception of compulsion, stating the view that neither medical examination nor physical training should be compulsorily imposed. This view has since been taken by most of the older universities, while the younger institutions have generally approved of compulsion.

The Constable Report was implemented largely by the dynamic effort and intense interest of the late J. J. M. Shaw, F.R.C.S. and Professor P. S. Lelean and a new era of student welfare was started in the University of Edinburgh at the beginning of the Winter Session of 1930, when a Department of Physical Education was formed under the Directorship of Colonel R. B. Campbell, C.B.E., D.S.O., M.A.

The activities of this department included a scheme for a medical service. The authors of the scheme had six principal objects in mind:

1. To obtain by medical examination at the beginning of the first academic year an accurate estimate of the physical state of each student entering the university.

2. To advise and treat students found at the routine examination to be not wholly fit.

3. To encourage students to undergo routine medical examination in each of their undergraduate years.

4. To create an efficient consultative and domiciliary medical service to advise and treat students requiring medical attention.

5. To interest the students in the importance of physical education and recreation as an essential part of their university curriculum.

6. To obtain data concerning the health of the students and to assess the effects of the various strains and stresses (mental, environmental, nutritional, etc.) to which they are subjected.

The Board of Managers of the Royal Infirmary of Edinburgh had provided since 1879 a special unit for the care of sick students, consisting of four small wards with a capacity of ten beds in which an average of 180 students annually since that date had received skilled medical and surgical treatment free of cost. Similar facilities were developed for students in the Aberdeen Royal Infirmary in 1937.

The Edinburgh Student Health Service had as its Principal Medical Officers Doctors J. K. Slater and Dorothea Walpole, and it was from this department that the first publications appeared on Student Health problems in Great Britain. (Slater, J. K., *Edin. Med. Jour.*, 1936, 43, 145: Slater, J. K., *Edin. Med. Jour.*, 1940, 47, 32: Verney, R.E., and Robertson, R.F., *The Lancet*, 1948, 251).

Student Health Services were developed before the war on somewhat similar lines at Aberdeen (1938), Bristol (1939), Liverpool (1938), Nottingham (1934), Sheffield (1937), Leeds (1938), Birmingham (women only, 1933).

It was not until the early nineteen-thirties that students became aware of the importance of University Health Services, and the National Union of Students published a report on this subject in 1933. Thereafter student associations, in particular the National Union of Students, the British Medical Student Association, the British Dental Student Association, and the Scottish National Union of Students became increasingly interested in problems concerning the health of students and published small manuals on *Health and the Student* in 1939 and 1943, in which there was a plea for more extended medical services for students, the provision of insurance systems to cover cost of medical treatment and the insistance that medical examination of all medical students should be made compulsory.

The University Grants Committee in its Report on the quinquennial period 1929–34 had become aware of the importance of a health programme and stated: 'The intimate connexion between the health of the mind and the health of the body is being increasingly

recognized, and we feel that the health of students at the universities is a matter which cannot be ignored.'

The provision of improved and extended facilities for physical training and recreation in the universities was given considerable impetus by the passing of the Physical Training and Recreation Act, 1937, and Directors of Physical Education were appointed in several of the universities, and with these came the embryo Student Health Services. Unhappily, the clouds of war and the ultimate outbreak of hostilities checked the impetus of these developing Services.

During the war years these Services were carried on by depleted staffs and were geared to meet the exigencies of the times by providing facilities for the members of the University Army, Naval and Air Training Corps as well as for students whose lives were not directly influenced by these training programmes.

As the clouds of war began to lift and the prospect of peace began to appear on the horizon, planning for the post-war world became the order of the day. In the Report of the Inter-Departmental Committee on Medical Schools, under the Chairmanship of Sir William Goodenough, recommendations were made on the Health of Students, Recreational Facilities and the Housing of Students.

In regard to Health—it was stated: 'We hold the view that universities have responsibilities in respect of the health of their students and that for the fulfilment of these responsibilities each should provide a properly organized Students' Health Service.'

In regard to the scope of such a service it was stated: 'The prevention of disease and the promotion of health would be the objectives of the Student Health Service in a university. In addition to advising the authorities of the university, the officers of the Service would examine students from time to time with a view to the early detection of disorders. Their advice to students would not be limited to questions of physical fitness; on occasions they would deal with the psychological problems such as arise in some students under the strain of intensive study and examinations. Medical treatment would be outside the province of the Service. When such treatment was necessary it would be the duty of the officers of the Service to encourage and assist students to obtain it in the proper quarter.' It was also suggested that 'Whenever feasible, the Service might be under the general direction of the Head of the Department of Social Medicine'.

The dictum that medical treatment would be outside the province

of the Service was a surprising recommendation in this otherwise excellent report. It is under conditions of illness that the student is particularly in need of the services of the Student Health Medical Officer; it is also under such circumstances that parents feel more assured if their son or daughter is in the hands of the official university-appointed physician rather than the landlady's panel doctor; and it is under conditions of illness that physician and student really come to know each other in a way that is never accomplished in a routine medical examination.

It is interesting also to observe that the Student Health Services which have developed under the direction of the Departments of Social Medicine—Cambridge, Wales, Glasgow and previously Oxford—continue to follow the recommendations of the Goodenough Report, making no provision for a treatment service, whereas most of those Services which have developed independently—University College, London, Birmingham, Bristol, Sheffield, Belfast, Aberdeen, Edinburgh and others—offer a full comprehensive Service.

The Report also stressed the educational value of a Student Health Service in the following words: 'A Student Health Service would be of benefit to all classes of university students and would be one of the means of inspiring the community to a sensible interest in the promotion of health. The Service is essential for medical students, since during their training they must inevitably be exposed to a greater risk of contracting disease. Further, the Service would have a special educational value for them, as providing a practical demonstration of medical practitioners in the role of health advisers. Such a demonstration related to the student's own health and problems is likely to make a more lasting impression than much exhortation. One of the most effective means of educating medical students in preventive medicine is to make them healthily interested in keeping their own minds and bodies fit and strong.'

In relation to recreational facilities, the Report stated: 'It is unnecessary for us to labour the point that adequate facilities should exist for students to take proper exercise.'

Concerning the housing of students, the Report strongly recommended the provision of halls of residence for a greater proportion of students (only 8 per cent before the war) and provision of measures to control lodgings so as to ensure healthy living conditions and adequate diet for those students who live away from home and cannot be accommodated in halls. As an outcome of these recom-

mendations many halls of residence were established in the various universities (with the exception of Aberdeen). Within two years of the publication of the Report a Department of Student Welfare was established in Edinburgh which concerned itself with the inspection and control of lodgings, supervision of accommodation in halls of residence, the provision of advice to students in matters of social difficulties and the creation of a liaison between students, teachers and parents. This department works in the closest co-operation and harmony with the physicians of the Student Health Service. Similar departments have since been developed in other universities.

The recommendations of the Goodenough Committee were supported by the Third Interim Report on Student Health Services from the Royal College of Physicians of London and formed an effective stimulus for development or introduction of Student Health Services in almost every university and college in Great Britain. In this advance the Nuffield Provincial Hospital Trust played a practical and stimulating part, financing a number of universities and sponsoring Conferences on Student Health at Oxford in 1947, Edinburgh in 1949 and Cambridge in 1951.

Student Health Services were established and whole-time Student Health Officers were appointed in Aberdeen in 1946 (Dr. A. H. Macklin), Belfast in 1944 (Dr. W. Johnston), Birmingham in 1946 (Dr. R. H. Bolton), Bristol in 1946 (Dr. West—later succeeded by Dr. Agnes A. Wilkinson), Cambridge in 1948 (Sir Alan Rook), Dundee in 1948 (Dr. H. Gibson), Glasgow in 1948 (Dr. A. S. Henderson), University College, London in 1948 (Dr. N. Malleson), Leeds in 1949 (Dr. R. Still), Manchester in 1951 (Dr. R. Logan), Oxford in 1946 (Dr. R. W. Parnell—discontinued in 1952), St. Andrews in 1948 (Dr. W. F. Mair), Sheffield in 1948 (Dr. P. Gifford), and Wales in 1947 (Dr. G. Grant). Part-time Medical Officers were appointed in Hull in 1945 (Dr. R. Raines), Liverpool in 1950 (Dr. G. Sanderson), North Stafford in 1950 (Dr. James Scott).

The introduction of the National Health Service in July 1948 brought free medical services to students and economic aid to those universities whose Student Health Officers were providing a comprehensive medical service. Capitation fees for students registered with the medical officers were mandated to the university, and while this income was not expected to cover the cost of the Student Health Service it did help to defray some of the expenses. With the implementation of the Danckwerts award it seemed that at least the

cost of maintaining the consultative and treatment part of the service would be met from this source, but in April 1953 the University Health Services were classified as 'Restricted List Practices' and, in consequence, income from this source has been reduced in some instances by as much as 42 per cent. Negotiations are in progress with the Ministry of Health to remove this unjust discrimination against the University Health Services.

The dental services as provided by the National Health Service Act have been utilized by some Student Health Services (University College, London, since 1952, Birmingham since 1952 and Edinburgh, 1954). In these services high-class prophylactic and conservative dentistry is made available to students, who have been quick to appreciate the benefits of this facility.

The free exchange of knowledge and scientific methods between this country and the United States of America has brought great benefits to the people of both countries and, indirectly, to mankind in general. In the field of student health this country has much to learn from the comprehensive and efficient organization which has been developed within many of the larger American universities: it was from the example of the Health Service in the University of California that Dr. Adami was inspired to launch his appeal in 1925. In 1951 Student Health Officers were privileged to meet Dr. Ruth Boynton, Director of Student Health at the University of Minnesota, during her visit to this country and were at once impressed by her profound knowledge and understanding of the problems in this field. It was with the intention of reaping from her rich harvest of experience that several Student Health Officers have visited her Service in Minneapolis and others, having arranged an exchange of staff, have enjoyed the privilege of working in her unit. In this way the Student Health Services of this country have benefited very materially from her influence.

The pattern of Student Health Services in this country is now firmly established. It remains for us to bring our knowledge and experience before our colleagues in the universities of the Dominions, and at the recent Conference of the British Student Health Officers' Association in Aberdeen, the first steps in this direction were made.

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III. THE PREVENTION OF PSYCHOLOGICAL ILLNESS AMONG STUDENTS

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SINCE the war, partly owing to the stimulus of the newly-developed university health services, attention has been repeatedly called to the state of mental health of students. For those in positions of responsibility, it has become impossible to avoid the attempt to answer the questions, 'How important is psychological ill-health among students?' and 'What is the extent of the university's responsibility with regard to its causation, prevention and treatment?'

As a factual contribution towards answering these questions, a study has been made of students presenting themselves for advice and treatment at the Student Health Department at Leeds. It is necessary first to define terms. What is mental ill-health? Symptoms vary widely in their severity, from the complete derangement that may occur in the florid episodes of schizophrenia, the profound depressions that, unsuspected and without warning, may sometimes lead to suicidal attempts, and the totally incapacitating attacks that affect the severe hysteric, to the trivial and evanescent symptoms of mild emotional disturbances which, at one time or another, few completely escape. For our present purposes we can ignore the trivial, and need not occupy ourselves with the occasional psychogenic headache or mild insomnia or emotional upset. Of greater importance are those conditions which reduce the capacity to study, and impair the student's efficiency, or interfere with the development of normally satisfying relationships. We have regarded these as the criteria by which psychological illness should be assessed and have included, for the purposes of our survey, all cases of mental, psychoneurotic or personality disorder of sufficient degree to interfere with the continuance or the successful completion of a course of study, or seriously to impair the efficiency of a student's work, or of such a kind as to interfere with the formation of satisfactory personal relationships, with consequent distress, which compels either the student himself

to seek relief or others to seek it for him. The essential criteria, then, are one or more of the following:

1. A serious and persistent impairment of efficiency in study.
2. A serious interruption of the continuance of a course of study.
3. A serious incapacity to form and fulfil normally satisfying personal relationships.
4. The recognition of a need for assistance, because of these impairments of capacity, either by the student himself, or by those round about him, on his behalf.

Where any of these conditions exists as a result of mental or emotional disturbances, we have regarded this as evidence of the existence of a state of psychological ill-health of sufficient severity to merit consideration and action.

By these criteria, out of every ten students who consulted the University Medical Officers during the sessions 1952–3 and 1953–4, one did so because of psychological illness. The figures are shown in the table (Table I).

TABLE I

Incidence of Psychological Illness, by years

	1952–53			1953–54		
	M	W	T	M	W	T
Students consulting Medical Officers	1315	498	1813	1380	451	1831
Students with psychological illness	117	64	181	121	61	182

A clearer picture of the situation is obtained if these students are grouped according to the degree of severity of their symptoms. Adopting the same standards as those used by J. C. Read in his psychiatric service at the London School of Economics, cases are regarded as severe when, for example, there are disorders requiring hospital care, or when symptoms are so severe that it is obvious to teachers that they need treatment and perhaps advice whether or not to continue their studies; moderately severe cases are those where there is considerable evidence of disturbance, but where social adjustment has been good enough for their distress to have remained to a large extent a private matter. The third group, of mild cases, is similar to the second, but milder.

By these standards, in the session 1953–4, of 182 students with psychological illness, 20 were regarded as severe, 28 as moderately severe, and 134 as mild. Eighteen (or 1 in 100 attenders) needed specialist advice and treatment; 14 needed treatment in hospitals, and of these 8 were in hospital for the greater part of two terms. We may estimate, then, that out of every 100 entrants, 2 or 3 will show signs of serious or moderately serious psychological illness. Another 7 out of each 100 entrants are likely to present symptoms of milder illness. Figures for other comparable social groups of similar ages are not readily available, but the published figures do not suggest that the incidence of psychological illness is higher among students than among other sections of the community. It remains, however, even to a greater extent than tuberculosis, the chief cause of prolonged absence from studies.

To complete the picture it is necessary to add a description of the types of psychological illness that are found to occur and an indication of the frequency of their occurrence. Among the severe cases, depressive and schizophrenic reactions are likely to be the most frequent. In a population of 3,000 students it would not be surprising to find an incidence of 4 or 5 schizophrenics each year. There would also be likely to be an hysterical reaction of severe type, and severe psychoneurotic and anxiety reactions, sometimes with and sometimes without additional somatic symptoms (such as dyspepsia or asthma). Our cases also included an acute mania which occurred in a patient under treatment for tuberculosis.

Among the cases of moderate severity, anxiety reactions are likely to be the most frequent. Depressions are also common. This group also includes examples of the sexual deviations, homosexuals and transvestists, and examples of personality defects of various kinds. Hysterical manifestations are not uncommon, and occur more frequently among women students.

Anxiety reactions form more than half of the mild cases, resulting from a great variety of stresses (homesickness, ill-judged overwork through over-conscientiousness, inability to handle an emotional situation, faulty judgment of capacity under pressure of finals, attempting too much because of too wide a variety of interests, and many others). These may show themselves as physical illnesses, with digestive, cardio-respiratory, or dermatological symptoms, or as headache, or insomnia, or simply with no other symptom than the inability to study or to concentrate or to remember what has been

heard or read. Again, among the mild cases there will be a few mild depressions; there will be a few nosophobics whose hypochondriasis may sometimes develop to the stage of a true hysterical reaction. There will also be some with various inadequacies of personality and emotional instabilities which will create difficulties for them and interfere with the completion of their academic programmes.

If now we make a careful study of each of these students with the object of finding out what factors operated to produce in each case the illness or symptom or breakdown we are left with a number of unmistakable impressions. First, in a large number of these cases, and especially in the severe and moderately severe cases, there are seriously disturbing features in the family history and in the family environment from which the student comes. In ten out of the twenty severe cases, for example, there was a history of a home broken by divorce, of suicide of a near relative, of death of a parent after a depressive illness or of severe and persistent family disharmony and violence. It is difficult to avoid the impression that these have been causative factors. Frequently also, even where there have been no grossly traumatic features in the family situation, it has added an element of stress which has been sufficient to weight the balance in the direction of breakdown. A woman student, for example, is left to do the complete housekeeping for her widowed father and schoolboy brother; when the father shows himself unappreciative of the heavy burden that is being carried, the task becomes too much.

The family environment may also contribute in a variety of other ways. Over-ambitious parents may expect more of their children than their capacities justify. Over-dutiful children may be led to plan their time unwisely through a mistaken sense of obligation to self-sacrificing parents. Invidious comparisons between the performances of brothers or sisters may produce an intolerable stress for the less able.

The next, and next deepest, impression that is created by a study of this material, is that the cause of the illness or breakdown lies, not so much in the actual stresses of the academic situation, as in some flaw or weakness or defect inherent in the student's own personality. The situation in which the student finds himself in the university is not one which would give rise to mental ill-health, were it not for the presence of some such weakness or idiosyncrasy. This applies to a large number of these students who have shown signs of psychological illness. There is some slight flaw or weakness in the material, and

this is likely to reveal itself in no matter what circumstances the student finds himself. In some this has demonstrated itself by a suicide attempt before the student has begun his university course, or by a previous history of attacks of depression, or by the production of some psychomatic symptoms, such as eczema or asthma, or by the occurence of some hysterical 'blackout' or some claustrophobic episode. The sexual deviants are a particular sub-group of this class with their own peculiar problems. It is in this group that are found those acutely miserable misfit personalities who have not yet learned how to adjust the eccentricities of their developing personalities to the rough and tumble of even so comparatively sheltered a milieu as a university. To be able to lay a finger on these flaws, and to be able to indicate how they may be strengthened and guarded against—these may be among the physician's most difficult tasks.

Stress of examination or of curriculum by themselves seem to be the cause of illness only comparatively infrequently. It speaks well for the system of selection that has been adopted that in only two or three instances has the occurrence of psychological illness been attributable to the student's being called upon to pursue a course for which he was intellectually ill-equipped.

Two other causes of psychological illness occur with sufficient frequency to call for comment—the emotional disturbance connected with a love affair, and the difficulty in adjustment that an overseas student experiences when settling in a foreign country for the first time. The anxiety that is occasioned by a love affair that, for one reason or another, is not going smoothly, is a potent cause of inability to concentrate on studies and of impaired mental effort. Not all such subjects are mentally ill, but the stresses so produced may be sufficiently severe to cause actual illness. The possibilities of loneliness and lack of communication of life in a foreign country, coupled with food and climatic conditions and surroundings that may be uncongenial, and the difficulty of study in a foreign language not infrequently form a sufficient additional stress to tip the balance from health to illness.

How much of this kind of illness is preventible, and what is the extent of the university's responsibility in its prevention? Of some of these illnesses, including the more serious among them, for example schizophrenia and the depressions, we do not yet know enough about the causes to be able to consider rational ways for their prevention. Here, then, is an urgent task in research ready to hand, in

which the universities can give a lead, and in which, along with those of other departments, the resources and facilities of a Student Health Service may perhaps be usefully mobilized. Provided that their primary task of making provision for the needs of individual students is remembered, the Student Health Services can also do useful work in the study of the developing personality which may help to throw some light on the causation of the psychological illnesses.

Prevention is most likely to be successful in those types of illness in the causation of which delayed or faulty development of personality plays an important part. Many of the anxiety states, for example, are due to the reaction of an adolescent personality faced with a stress situation the depths of which it has as yet not had the opportunity, nor mustered the courage, to sound. Prevention of similar reactions in the future can be achieved if wise and appropriate guidance is made accessible to the student at the time when he needs it. The physician is often in a privileged position to give such guidance, and it is sometimes necessary that it should be given by someone with medical knowledge. In hysterical or schizophrenic reactions, for example, it is important that the correct advice, depending on the correct diagnosis, should be given without delay, and this will be a task for the physician. The sex deviants in this age-group are also particularly important, and are likely to need specialist help and care. In some cases, however, the necessary guidance can best be given by the one who enjoy's the student's confidence. Here is a great need in our universities, whether within or without the framework of a formal tutorial system, that the staff should contain a sufficiency of men and women who are able, both by inclination and qualification, to recognize the early symptoms of stress in their pupils and to give wise guidance effectively where it is needed. Ideally there should be, and in many of our universities I am sure there is, good teamwork and close co-operation between all who have reason to be concerned about a student's welfare, professor, dean, tutor, supervisor, warden of hall, tutor of women students, student health physician and medical specialist. Not all may be advising the student at the same time; but it is important that, so far as possible, there should be agreement and nothing that is conflicting in the advice that he is receiving. In view of the special stresses to which students from overseas are exposed, it is important that there should be in the university those whose concern it is to see to it that the ill effects of these stresses are minimized.

In this little world of the university, much can be done where there is a sensitive awareness of need, and a wise and trained capacity to be of help. Let the universities, as Dicks has urged recently, do all they can to improve the ease of access and liveliness of warm human relations among students and teachers. In this way the university, while not responsible for predisposing its members to break down, will fulfil its duty to see that its social structure and climate do not bring the predisposed nearer to illness.

IV. PSYCHIATRY AND THE UNDERGRADUATE

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WITH the psychiatric needs of the defective, the delinquent and the mentally severely ill making such obvious claims on our attention, it is easy to lose sight of the amount that can be done for the psychological health of those who are able and willing to take their place in the normal ranks of the community. Adults of ability and mature age, already engaged in their lifelong occupations, must be trusted to look after themselves and avail themselves of the advice provided by public or private services. But the adolescents and young adults who make up the undergraduate population of our universities are at a stage in their development both personal and social which makes them peculiarly vulnerable and without the resources to fend for themselves.

Recent policy, by extending through the system of grants the opportunities of receiving a higher education to those who formerly were ruled out on economic grounds, has increased the financial and cultural difficulties incurred in becoming an undergraduate. But having rightly encouraged new types of person to the adventure, society has a responsibility to assist these new candidates to master the difficulties for which nothing in the experience of their families could have prepared them.

As Sir Walter Moberly[1] describes them: 'When they get to the university, [students] are working under a series of pressures, the weight of which is perhaps not yet fully realized by many of the older teachers. There is the pressure to cover the ground of an exhaustive and exhausting syllabus, to make ends meet, to make sure of a job; for many there is the pressure of uncertainty about personal standards and beliefs.'

The academic pressures are acceptable enough; although it must be recognized that to do well, after a number of years of intensive

[1] *The Crisis in the University* (S.C.M. Press, 1949).

study, in examinations at fixed dates, and often with no chance of a second attempt, is as much a test of mental and physical health as of intellectual ability.

The financial problem is very real. Three years more, or longer, of economic dependence at the end of a grammar school career seem to require a very solid return in some shape or form to those who maintain the student during this unproductive period. That the money to support the individual while continuing his studies at the university comes to him as a grant from some such vaguely envisaged body as a County Authority does not lessen his sense of responsibility, and by making the situation impersonal may even add to his insecurity if the course of his studies is at all stormy. This uncertainty may be intensified when the recipient of a grant comes from a family in which the real value of taking a place at a university may very likely not be understood.

In the matter of personal standards and beliefs the undergraduate is a relatively untried person. He has yet to prove himself. At the university he is encouraged to reveal himself to himself, though not necessarily to others, in all aspects of his culture, sexual, intellectual, social and religious. For one so occupied, the critical and experimental atmosphere of undergraduate life may seem rather inimical to protective conventions and traditions. For a minority the difficulty of relating a marriage made earlier in circumstances which did not allow for several years of studentship is a problem of its own.

The healthy personality will find the university experience, with all these strains, an encouragement and a discipline for his maturation. But for the more vulnerable individual the conditions may enlarge the chance of giving way to weaknesses or abnormalities which might have remained latent in less exacting circumstances. For all of us it could be said that to become an undergraduate is to encounter certain psychological risks. But this is especially true of those for whom the opening of the door of the university has created a marked contrast in the pattern of their social and cultural environment. We must face the fact that the attempt to solve educational problems may bring about other and subtler problems for society. But when understood these problems can be mastered in their turn.

To illustrate this, I will quote a case typical of many seen during the past eighteen months at the Psychiatric Advisory Service for the students of the London School of Economics.

A gifted young man came for advice because of embarrassing

attacks of blushing and sweating which afflicted him when any attention was centred on him at parties. His background was relatively humble; his parents were small shopkeepers in a provincial town. The man himself was an able and most attractive personality, which caused him to be claimed by the more social activities of the School. His personal insecurity was exaggerated by this success, just as, before coming to the university, he had resigned from a business career when his seniors showed signs of making him a candidate for early advancement. In both situations his insecurity expressed itself in neurotic symptoms of anxiety. Had he not had qualities which led to his being picked out, he might very likely not have suffered. But though his symptoms were provoked by social stress, they could not be countered in this field. By dealing with the problem on a personal level with the help of a psychiatrist, the student was able to meet and enjoy his social commitments and to take the excellent degree which was a step towards fulfilling his promise.

A problem with some similar features is that of a young man with a speech defect which improved a good deal as he came to terms with the double insecurity of his relationship with his parents and the growing difference between the social setting of his professional life and that of his family background.

In spite of superficial differences the problem of a girl who was threatening to break down a second time after a year of leave was of the same kind. Her parents were wealthy and would have preferred her to stay at home until she married. When she realized how much her emotional dependence on her father was responsible for her failure to work for the degree which would give her freedom to do as she wished with her life, she found the courage to finish her course with success.

In many other cases seen, the difference between the atmosphere at the university and that of the student's home was having a similar adverse effect. The problem is seen in an intenser form in the many foreign students who come for advice.

But although the conditions of strain in which undergraduates must be expected to function are recognized, many do not agree that Psychiatry should be used to help them. There seems to be a certain distrust, not so much of its competence, as of its actual intentions; a fear that an efficient psychiatrist will seize on a troubled personality, wring it and mangle it, and leave it, if not so white, at least as flat and sterile as a newly-pressed handkerchief. No psychiatrist I know

could or would have anything like this effect on his patients. Human personality is made of stronger stuff than this; and as a matter of fact the technique of the psychiatrist has nothing in common with that of the modern laundress.

But the universities are right to wish to preserve the unusual personalities that come to them in all their uniqueness. Shelley has recently been cited as an example of an eccentric whom no one would wish to exclude from the opportunities of a higher education on psychiatric grounds. Certainly; but once admitted one might very well hope to parry the self-frustration of such a man and at least try to help him to stay the course. Shelley was eighteen when he went to Oxford and nineteen when he was sent down; and within six months, during which he was rudderless in London, he had married a girl as unstable as himself. I never heard that *The Necessity of Atheism* was a work of major literary importance and it seems unlikely that the unhappiness caused by this *mésalliance* had any advantageous effect on the quality of Shelley's poetry. Translating such a situation to the present time, one would hope by sympathetic discussion of his problems to retain so brilliant a student to experience to the full the maturing effect of the university experience and save him and society to some extent from the consequences of his impulsiveness.

To give a second example; Thomas Gray is another case in point, though of a different kind. Shy, seclusive and middle-class, with a background of parental strife, his brilliant friends at Eton detached him from his natural milieu. His sensitiveness and insecurity developed through the years into a more or less crippling attitude of neurotic doubt which not only made him into a butt for undergraduate humours but probably seriously limited his contribution both to literature and science. Is it possible that psychiatric advice to such a man when an undergraduate might have released him then and in later life?

Other examples among the figures of literature come easily to mind. To return to Oxford, a century nearer our own times, how instructive it would have been to have had a sequence of interviews with the undergraduate Ruskin or Swinburne—whatever the outcome! No one will deny that the disorder in their personal lives caused great unhappiness to themselves and many others.

These names are found by a casual glance at a single shelf of books; and it is natural to choose literary artists to illustrate this

theme, as the character of their medium invites an interest in their private lives. But I have little doubt that a glance through the *Dictionary of National Biography* would collect examples as easily from other professions. There is very little evidence to support the theory that the superior achievement of such famous men was in any way enhanced by nervous disorder. Whether this is so or not, they had the gift of genius to make their personal maladjustment tolerable. Ought we not to do everything we can for those whose performance is likely to be ordinary but whose social incompetence may be in its degree as great and whose personal unhappiness every bit as acute?

But, if the troubled student is to be helped, it might be argued that the aspect of such work that deals with the social consequences of his difficulties could be as well or better handled by a chaplain. This may be so—but which chaplain? Students at most university schools belong to a variety of religious creeds or none at all and, while a chaplain of the commoner denominations might easily be at hand, it seems unpractical to provide a religious adviser to cope with the needs of some who are in a small minority when they are quite ready to get help with the personal and non-theological aspect of their problem from a psychiatrist whose religious orientation does not obtrude itself on the situation. During the past eighteen months I have been consulted by students who were members of many Christian denominations, ranging from Christian Scientists to Copts, as well as members of other faiths. It would be difficult for any university school to provide specific religious care for all of these. And at the stage at which many people are during their university career, the beliefs in which they have been brought up, while by no means finally rejected, are as it were left on the table for consideration; and when a student's religious notions are in such a state of suspension, he is very unlikely to give the official representative of that particular formulation of belief the opportunity to help him with his emotional and nervous difficulties.

It was to cope with such problems as these that the Psychiatric Service for students at the London School of Economics was started in January, 1952. It was argued that if a Psychiatric Adviser, comparable to a Careers Adviser or a Dean of Studies, were available in the School, he could be easily approached without the formalities required by a Hospital Out-Patient Department and without arousing the prejudice and fears which often stop a person from seeking

psychiatric help at a time when it can be most effective. And so it has been found. Present-day students find it no more unconventional to have psychiatry available in case of need than any other form of medicine. In these circumstances, much mental ill health can be taken in hand early; the acute psychosis caught in time and saved from unnecessary disaster, many neurotic difficulties investigated without delay, and quite a number of symptoms of one kind and another looked into, recognized to be unimportant, and so freed from anxiety and shelved. Many of the problems presented by university students are not those that a general practitioner can very well handle, and students as a rule do not feel disposed to go to a hospital for help about them. Typical of the disorders to which I refer are psychosexual difficulties, morbid self-consciousness, failure in concentration and mild anxiety and obsessional states, many of which improve most hearteningly if treated suitably at this age and in this type of individual.

The Psychiatric Adviser so established is in a privileged and advantageous position. The students can get in contact with him with a minimum of formality and he is at hand if any emergency occurs. Should cases in which he is interested be involved in problems of discipline, he and the administrative staff can consult together without the least difficulty. He has access to records, so that he can evaluate a student's progress without drawing attention to his enquiry. The opportunities of contact with the teaching staff make it possible for him to co-operate in a personal way to assist the student with his problems. By functioning within the School and being on friendly terms with all parties, the Psychiatric Adviser obtains a grasp of the whole life of the establishment which is of subtle assistance to understand the student's difficulties. This quality would be lost, however co-operative a Hospital Out-Patient Department might be, as those who run it must fail to be as intimately in touch with the life of the School.

The strength of the Psychiatric Adviser's position is that he is within the School and yet distinct from it. He is thus identifiable in the mind of the student with both the teaching and the administrative staff and yet separate from them; so that in interviews with him, his patients can reveal weaknesses of which they are ashamed with the fear of losing respect or damaging themselves in the eyes of the authorities reduced to a minimum.

The social need for treatment of the nervous disorders in person-

alities that are predominantly well-adjusted to the demands of life, and especially in those who may have the ability to make more than the usual impact on their environment, is expressed by this quotation from *Richer by Asia*:[1] 'In reality it is not the neurotic personality . . . which is important to the world but the fragments of neurosis or delusion in normal men (including psychiatrists). . . . The world cannot be saved from destruction by eliminating clinical neurosis among individuals and groups. It can only be saved by eliminating the neurosis in normal men . . .'; or as Sir Walter Moberly more arrestingly puts it: 'Flaws in Wilsons and Roosevelts are more dangerous than the Satanism of Hitler or Mussolini.'

To make a last quotation: in *On the Principles of English University Education* Whewell said: 'The chief duty of the university is to produce good citizens. It should train an élite who are to be the future leaders in affairs and in the learned professions.' These words were written a hundred years ago but they still hold good. Many things may have changed since then, but surely not our wish to have those capable of sustaining an advanced education as sound physically and mentally as it is in our power to make them. And in this endeavour it seems to me that psychiatry can make a very real contribution.

[1] E. Taylor, *Richer by Asia* (Secker and Warburg, London, 1948).

THE IDEA OF UNIVERSITY EDUCATION

Sir Charles Morris

II

The Joseph Payne Memorial Lectures delivered at the College of Preceptors in London in February and March, 1954.

WHAT then can the university do in the three years that are given to it? I have said that the young man must build up for himself a capital stock which will stand him in good stead for forty-five or fifty years of active life. But a capital stock of what? Certainly not of course of information, or of tricks of some specialized trade. When he looks back from the eminence of ten or twelve years hard experience in his chosen professional work, he will regard the information or the specialized skills which he had at his disposal when he left college as very meagre affairs. The civil servant of thirty-five has no great opinion of the mere knowledge of the young graduate of twenty-two; and the surgeon or literary critic is not greatly impressed with the handiness with skills or techniques of the younger man. The truth is that the undergraduate when he takes his first degree knows very little as compared with the knowledge of older men of similar abilities and training; and the operations of the young graduate practitioner in any of the professions seem very amateurish as compared with the professional sureness and precision which should come some years later. As for judgment, this can manifestly be based only upon experience.

There are t' us obviously many things which the university cannot give in these years. But what *can* it seek to give? I have so far taken it for granted that what it aims to give has something to do with the intellect and the life of the intellect. And I think that is right. What part is the young man's intellect going to play in his life? For better or worse the answer to this question will determine his destiny—his happiness and misery, and his success or failure in serving God in Church and State. But what can a university do for a young man in respect of his intellect during his undergraduate years? I suppose it can help him to learn how to use it, and also to come to terms with it and judge it. It may be—it is often said in university circles—that

the universities are being much more successful in the first of these matters than in the second.

Even in regard to the first, the use of the intellect, there are two kinds of use to be distinguished, which I may be allowed to be old-fashioned enough to call the 'theoretic' and the 'practical' use. Every man will of course have to make use of his intellect in both manners, though he will probably depend more upon the one than on the other to earn his bread and butter. It is possible I suppose never to be 'theoretic' in the sense here used, though there must be very few men or women who can altogether avoid spending time theorizing about the great human questions. But on the other side even the most abstract mathematician or philosopher must use his practical reason to fulfil his obligations as a husband or a father. Moreover, in a sense the very part which intellect is going to play in the future of the human race is in very large measure a responsibility of the universities. And if in the fight for the triumph of reason in action the mind of man is fighting a losing battle, the universities should do some heart-searching.

It may well be held that training for the theoretic use of the intellect is in some respects very good indeed. Not more than forty years ago there was very little effective class teaching of science at all. Those who learned science had to learn it the hard way—that is, they had to learn it for themselves. The keen young scientist might come up against, or work with, an older and more experienced scientist who could teach; but more probably what he learned from trained scientists he had to learn for himself, just as the young apprentice had so often to learn entirely for himself by watching and working beside the skilled craftsman. But nowadays all that is changed; an immense amount of thought, and some genius, has been given to the task of working out a well-constructed curriculum by which the would-be scientist can be made into a chemist or a physicist or what you will. The young man or woman can now travel to the end of this limited journey almost as if he were possessed of a reserved ticket on a through pullman car. These curricula can be improved and no doubt will be improved from time to time. But they are extremely good and very well thought out, and they achieve a very high degree of success within a limited field. The schools and universities can reasonably be proud of them.

The questions which everybody is asking himself to-day are about the limits of this training, and of the skills which it gives; and how

much these limitations matter. Is this specialized success being bought at the cost of the starvation of the imagination and of *élan*, and of the weakening of stamina? For imagination, *élan* and stamina are necessary even to the theoretic use of the intellect. The day is long past when it could be thought that the collection of immense numbers of observed facts would of itself ensure the production even of the humblest piece of finished scientific theory or knowledge. Not only the elementary mathematician, but the front-line physicist or biologist also, constantly comes to obstacles at which he is 'stuck'; and something has got to get him round his obstacle and start him going again. This rescue can rarely, indeed never, come from merely collecting more observed facts. In the end there is no escaping the necessity of thought; and thinking requires imagination, and the powers of thought and imagination need cherishing and training—cherishing almost more than training. There is nothing that can be more easily stunted, and eventually killed, by the mis-spending of the years of youth than the power of imagination, unless it be the power of sensibility which is very closely allied to it. But as the sensibility does not matter very much to the theoretic use of the intellect except through its influence on the imagination, we need say no more about it at the moment.

Subject to this reservation of the question whether we are doing enough to cherish imagination, *élan* and stamina, we may take it that we are succeeding very well with the training of the theoretic use of intellect; better, it may be, than schools and universities have ever done before. And even with these qualities, though we are rightly very sensitive nowadays about our record in regard to them, we cannot be failing as dismally as we are sometimes apt to think. When we look back upon the achievements of recent years we cannot fail to admire the resource and persistence, as well as the industriousness and the technical facility, of the specialist in our generation. Imagination cannot have been entirely atrophied in him in his youth, nor can the other powers have been entirely underfed.

Still, when we consider more closely the question of the education of the intellect for its practical employment, we do seem to tread upon somewhat uncertain ground. I do not wish to use the word practical in any narrow way, but rather in the sense which I think Aristotle had in mind. I mean any use of the intellect where its operation has a bearing on action or decision. Most of those who go to a university to educate themselves will cease to live the life of the

scholar or the scientist when they leave it; they will do what they do in the world for the rest of their working lives as practical men, not as men of theory or men of learning; and it is by the influence that it exerts upon their lives of action that their university education will be mainly judged. What can the university do for a young man or woman in regard to the faculties and capacities by which he will for the rest of his life make the judgments which will be necessary for his actions and decisions if he is to serve his generation as a rational, an educated man?

Here a popular picture quickly comes to mind and it perhaps suggests a popular answer. As a practical man the popular estimation holds the traditional professor to be a figure of fun—absent-minded, not even aware often enough when action is called for, still less knowing about what particular action to take. So what could a young man learn of bringing his mind to bear upon judgment and action in a world of professors? But at the same time there is another popular belief which goes in a different sense: that the undergraduate learns the art of living from his friends and contemporaries —on the river, in the dining clubs, at the union, and at a thousand other times and places. He can follow his interests with a freedom and a gusto which will hardly be possible for him later; he can make his mistakes with a retribution only serious enough to help him to learn, not relentless enough to damage his life. A well-judged degree of irresponsibility in the university years can turn out the young man and the young woman most conscientiously and reliably responsible for life.

But that is not the whole matter; and it is important in this issue not to be satisfied with anything less than the whole matter. It seems not too much to say that in our time, here and now in the middle of the twentieth century, reason as a determining influence on human action is fighting for its life. There are many voices to say that reason in its theoretic, its scientific employment, is capable of anything—of discovering any truth and of inventing any machine or instrument. But how often do we meet a sure answer to the question whether reason in its other employment can enable man to lead a reasonable life, and maintain a reasonable society, ultimately we hope in a reasonable world?

We have noted before that the young man or woman of twenty years or so is developing his powers fast, for better or for worse, whether he notices it or not. How can he fail in these years to grow

in his powers of practical reason? The truth is, whether or not he pays attention to the fact and the tremendous significance of the fact, he will think about problems and will come to conclusions which will be determinant of his future faiths and beliefs. Nothing can prevent this from being so; and if we are to take thought about university education at all, we must take thought about this aspect of it. No doubt it is no part of the business of a university to provide the young with beliefs. But if in his student years the young man does not acquire a sturdy faith in the power of reason in human affairs something has gone wrong with the university. Even if a whole generation went out into the world with nothing but an amused cynicism about the value of practical reason in the lives of individuals and of nations, something must have gone wrong with the universities. If a whole generation went out bewildered, simply not knowing what to think or believe about the value of human reason for human action, something must certainly have gone wrong with the universities.

I know that not so long ago there were powerful and learned voices in our universities teaching that the study of history could not possibly teach us anything which might help a statesman in his political decisions; that the study of moral philosophy could not possibly make us better, or even more knowing in our moral decisions; and so on. We have had to admit, I am sure, that these doctrines have drawn attention to some small neglected germs of truth. But taken at their face value they surely prove too much. Nobody will ever really believe that a man's use of his reason cannot be improved and strengthened by his studies; or that some studies do not have a special virtue in developing his reason in its theoretic employment, and others in its practical; or that it can be right to neglect entirely during the years of youth studies which have a special virtue to strengthen and discipline the power to use one's reason in living.

It might be thought no doubt that in actual fact the university need take little account of these matters, because on this side of his education the young man can well look after himself. The problems involved, in fact, may be held to be problems for the school, not for the university. By the time the young man is eighteen or so, it may be said, he will be a sufficiently balanced person to find the right intellectual exercises for himself. If he is a mathematician, he will read the poets in the evening in his slippers; and if he is a historian or a linguist, he will read the biographies of the great scientists and

go to hear them lecture from time to time. It is the business of the schoolmaster to see that he has the right interests, and that they are lively enough and sturdy enough to guide him of his own impulse and his own judgment to the right way of life for himself at the university. It is the business of the university rather to strengthen him in his concentration on his main intellectual concern, and to fortify him in the practising of an exacting discipline; and indeed to protect him from those who would encourage him to cherish other abilities and interests by the wayside, dangling in front of him the seductive picture of the balanced life. The philosophy of the whole man is without doubt an attractive philosophy. But, according to this view, the scientist and the scholar, who has to develop one ability to the detriment of another, to purchase one achievement at the cost of another, cannot expect to be the 'whole man'; and it is the business of the university to make the scholar and the scientist.

To this I am tempted to reply that it is possible to overdo the precautions against such seduction. Surely we are working on the wrong assumptions. It does not seem to be true that the boy or girl has been securely fitted out at school with a constellation of interests and purposes which will secure a balanced and healthful way of living during the student period of intense concentration within a specialized and exacting discipline. Some people think that the undergraduates used to come up to the university better endowed in these ways than they do now; but almost everyone agrees, I think, that all is not well to-day. For myself I do not think that the school alone could ever do the job. For one thing, the young man is still too young at eighteen for anything whatever in his education to be as fixed and finally done with as this view would require. And for another thing a university is itself a very powerful educational institution, and will by no means leave the young man as it found him after three years or even at the end of one term.

I hope to return to this point later.

THE SWISS FEDERAL SCHOOL OF TECHNOLOGY. II

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THE problem of general education at the Institute is envisaged seriously. 'The technical sciences,' we read in the Commemorative handbook, 'though indispensable to the development of material civilization, are not without danger to those who devote themselves entirely to their practices. If we can believe men well placed to make such observations, it often happens that young engineers do not show, in the enterprises in which they collaborate, all the qualities that educated men could be expected to show; it can happen that they ignore, that they do not even discern, the human significance of the duties that devolve upon them. Cultivated in isolation, the exact sciences, physical and natural, cannot confer a perfect balance on the mind or that suppleness which the complexities of life require. To face the danger of excessive specialization the law founding the Federal Institute provided for a Section of Philosophic and Economic studies, which in its present form constitutes a small faculty of arts and social sciences. . . .

. . . By providing a place of relative importance for these branches of study the Institute wished to direct the attention of its students to the overall unity of civilization and the life of the mind. Only too often the specialization characteristic of modern studies and professions prevents our contemporaries from doing justice to the merits of those who distinguish themselves in other professions and in the field of disinterested thought.'[1]

Evening hours from five to seven are reserved for classes and exercises in this section. Students of all departments are expected to register for at least one course involving a minimum of one hour's attendance per week. Members of the cantonal University and 'auditors' from the city are allowed to attend for a small fee.

What few contacts I made with the teaching staff of the Institute were with members of the section of general education. Grateful

[1] Commemorative handbook, pp. 38–9.

memories remain of talks with Professor Fritz Ernst and Professor Max Wildi. The former, a scholar of distinction, combines a professorship of Comparative Literature at the University of Zurich with a similar appointment at the 'Polytechnicum', working, as he said, a half-and-half programme.[1] He lectures habitually thrice a week at the University, and twice at the School. Attendance at his classes in general education fluctuates according to the subject. A modern subject attracts a large audience; when he deals with an aspect of his own specialism the number may drop considerably.

From Professor Max Wildi, who occupies the recently created chair of English as 'professeur extraordinaire', and who speaks our language fluently, I learnt that the twelve chairs comprising the general section carry a remuneration equal to that of technical appointments of the same status. Some of them have been filled in the past by men of the eminence of De Sanctis and Carl Burckhardt. The section is composed of departments of German, French, Italian, English, Philosophy (with theory of Education), History (two chairs: General and Swiss), Law and Political Economy. In the two latter departments the teaching is reduplicated in German and French. Additional reasons were given for the cultural side of the work. The special situation of the country involves instruction in three languages. Swiss engineers and architects must know German, French and Italian. Also, as specialization comes late in the courses, some idea of general subjects, some insight into the philosophy of things (as Professor Wildi put it) is necessary.

Interrogated more closely about the general courses, Professor Wildi admitted that while students are expected to register for at least one such course, they are not compelled to attend. Attendance varies 'tremendously'. Courses on general trends and tendencies, economic theory, world history in the twentieth century and psychology prove attractive, as do courses in the German and French languages and literatures. English literature is regarded as more specialized. Readings in Shakespeare are conducted with groups of a dozen students. But practical introductory courses in the English

[1] The post held by Professor Ernst at the Technical Institute is that of 'professeur extraordinaire', a status preliminary to the full professorship. The retiring age in Switzerland is seventy, though professors can withdraw at sixty-five, as schoolmasters do. The total number of professors at each of the Zurich centres is at present about one hundred. Salaries are paid by the Federal Council. An ordinary professor's salary is composed of a fixed salary of 18,000 francs (£1,500) a year, to which is added a superannuation grant rising by annual increments from 400 francs, paid in the second year of service, to 4,000 francs. Grants, at present of 14 per cent, have recently been made towards increases in cost of living (1952).

language can draw from sixty to eighty students for a couple of hours a week, with home-work including the reading of a good book (e.g. Benjamin Franklin's *Autobiography*).

Dr. Hans Bosshardt, the Chancellor's secretary—whom I have to thank for advice and documentation—informed me that, far from having deteriorated in quality since the recent war, the students show an increased sense of responsibility. Selection for the School has become stricter. Careers have become less safe and competition is fierce. I was given the impression generally that, owing to the low costs of education, the scholarship question is not an urgent one in Switzerland.

Some interesting sidelights on the constitution and maintenance of the Institute are reflected in a document written by the President, Herr A. Rohn, and published in 1946.[1] It is a defence of the policy of the School in reply to attacks made in 1945, at the time of its request to the Federal Government for a credit of 27,000,000 francs (£2,200,000, at the present rate of exchange). The petition was carried by a practically unanimous vote in the following year. But the discussion in the Federal Chambers provoked a press campaign, criticizing the School's administration and stressing the relative claims of the universities.

It should perhaps be explained that, with the exception of the 'Polytechnicum' at Zurich, all educational establishments in Switzerland are the property and concern of the cantons. 'State' university in the Swiss sense means 'regional' university, not 'national' university, as in France; and a certain independence, even a certain jealous exclusiveness, characterize 'state' education in Switzerland from the highest to the lowest levels.

Claims for an increase of grant, such as might involve additional national taxation, could hardly be expected to pass unquestioned in the cantons, in view of their prior commitments for university costs. The nature of the debate that ensued is clearly shown in a phrase from the defence. Referring to the reputation of the Institute, the President asks: 'Should the School really be limited to-day because it appears to be entering into competition with the cantonal universities? What would our country gain by *lowering*[2] the scientific level of the School, and what would the universities gain?'

The real reproach made against the 'Polyoctopus', as one news-

[1] *Ecole Polytechnique Fédérale: ses buts et son enseignement.* Réponse à de récents critiques par A. Rohn, Président du Conseil. Editions Polygraphiques S.A. Zurich 1946.

[2] The italics in this section are authentic.

paper critic called it,[1] is that of having *deviated from the direction given* to it originally and of having gradually become a 'federal scientific University' in competition with the regional universities. The defence won't admit this. What has changed, it is claimed, as the result of the two wars, is the *financial basis* of federal undertakings. So long as the Confederation could develop its Technical School on receipts from the customs, postal and telegraphic services, etc., no canton could feel that its financial resources were affected. It is not the same today. Since 1915 the Confederation has been obliged not only to levy direct and indirect taxes on all nationals alike, but to allocate subventions to various cantonal enterprises. But, the defence points out, the Technical School was intended to be financed by credits, not by subventions. While the universities serve regional requirements, the Institute is a symbol of 'Switzerland one and diverse'; and what better *symbol of national unity* than a School whose principles are less influenced by diversities such as constitute the *raison d'être* of the regional universities? The fundamental data of the pure and applied sciences and the constructions placed upon them are the same in French as in German Switzerland: they are not subject to the imprint of the moral or ideological disciplines. The School is an organism of interest to the whole country.

The pamphlet then comes to a point of particular interest for the organization of general courses and for discriminations between the 'technical' and the 'technological'. Referring to the Federal law of February 1854, which prepared the way for the School, and from which its policy is now accused of having deviated, the defence points out that its second Article made the following provision: 'Branches of teaching in philosophy and political sciences are joined to the Polytechnique School, in so far as these sciences can find their application as sciences auxiliary to a higher technical development. They include modern languages, mathematics, natural sciences, political history, Swiss public law and political economy. The School may also serve to train teachers for technical institutions.'

The Federal Institute is reproached with having 'exceeded its original cadre', in particular with having gradually organized chairs of *pure mathematics*, *pure physics* and *pure chemistry*, while, the opposition maintains, the role of a School for engineers is 'to adapt technicians, their practice and their technique to the conquests of science'.

This is admitted. But how can the engineer adapt his work to the

[1] My translation of ' "Poly"tentaculaire'.

conquests of science, if he is not informed during his studies of the most recent notions in the pure sciences? How would it be possible in a country which is in all spheres of its activities 'condemned to superiority', to train a mathematician, a physicist or a good mechanical or electrical engineer without putting him in contact with the present state of studies in these subjects? The foundation laid in these disciplines at the Technical School will alone permit the young engineer to adapt himself later on to the technical needs of the time in which he lives. The fundamentals represent the long-term training of the engineer, while the application of this fundamental knowledge taught in the later semesters of the School can give only a present-day image of technical progress, i.e. only a passing form of application of the basic sciences to the work of an engineer. It goes without saying, moreover—and this distinguishes the School from a University—that mathematics, physics and chemistry are always taught at a polytechnique school with a view to preparing more or less direct application to the art of the engineer (p. 12).

Exception was also taken to the fact that natural science and pharmacy were taught at the Institute. But of more interest to us is the defence of the cultural section, which was designed 'to inculcate *aperçus* of general education', a task no university would charge itself with. For the universities prepare specialists in these subjects, the syllabuses for which bear no relation to that of the Polytechnicum. How could the School train men of a broad and open mind, able to hold their own in the intellectual world, unless it sought to complete their general education in the course of their technical studies? It is recognized as important above all to avoid the professional deformation which dogs in particular the engineering student.

One or two of the attacks were on the level of mercenary aspersions. The School was accused of 'drawing by gold' the teaching staff from the cantonal science faculties and of attracting their best students to increase its own total. The reply was that the School can only accept 'very capable' candidates. It is allowed to impose an entrance examination only on foreign candidates; out of 155 foreign applicants in 1946 it accepted 65.[1] But it attaches great importance to the fact that its pupils should possess, at the time of admission, such knowledge as will, so far as can be judged, permit them eventually to pass the

[1] In the same year 800 national candidates were admitted on adequate Swiss qualifications. In some years the School has actually had more foreign than Swiss students.

various tests of the diploma.[1] It was also pointed out that all the chairs created during the last twenty years have been for teaching and research in industrial and agricultural subjects which have no place in the universities, while the ratio of teachers to students has regularly decreased in a disquieting fashion since 1900.[2]

The Federal Institute, it is claimed elsewhere, has fulfilled its task; the fact that Switzerland, a country practically devoid of natural wealth, is to-day the type of an industrial nation is considered proof of this. A glance at the great things achieved in Switzerland—its railway system, its hydraulic power stations, its electrical, mechanical, textile and chemical installations, the development of its agriculture, afforestation and rural engineering—will suffice to reveal the pre-eminent role of the School in this multiple national effort. The benevolent support of the Federal authorities and of representatives of Swiss industry and agriculture likewise furnishes proof of the appreciation of the services rendered by the School to the development of the general economy of the country.

[1] It appears that youths preparing themselves for entrance as engineers or agriculturalists find the test in education a stumbling-block.

[2] The secretary has kindly provided the relative numbers for 1952–3: registered students, 2,697; professors ordinary and extraordinary, 103; ratio of students to professors, approximately 23 to 1.

SOME NOTES ON LATIN-AMERICAN UNIVERSITIES

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In November-December 1953 there was held at Santiago, Chile, the second conference of Latin-American universities. The first had occurred at Guatemala four years before. A request was received that British universities should be represented and I was asked by the Vice-Chancellors' Committee and the British Council to undertake this mission, and to collect what information I could about Latin universities in the short time available—a week at Buenos Aires at the request of the British Council and a fortnight at Santiago. In the second week there I paid brief visits to the other universities of Chile—at Concepción and Valparaiso—and usually paid special attention to the medical and dental schools since I was better qualified to appraise these departments. The following notes are the result. My total lack of Spanish till the eve of my departure was, to a considerable extent, compensated by the constant service of a very efficient interpreter. The facts I relate and the impressions I received were derived principally from conversations with the Rectors and other delegates, supplemented by the various documents distributed to those attending the conference. Argentina and Chile were the only countries actually visited.

The old colonial universities of Latin-America, like those of medieval Europe, were mainly concerned to teach natural philosophy, law, letters and theology. The Law and the Church supplied all the administrators required by simple colonial societies, and it has been only during the last hundred years that a demand has arisen for substantial numbers of other university-trained professionals to serve the needs of the more complicated societies born of the Industrial Revolution. This development, paralleled in Europe and North America, has produced the problems with which we are only too familiar. The first is how to combine the acquisition of high professional accomplishment with a wide general education such as will fit university graduates to lead a full life at a high level of thought,

feeling and conduct. The second is how to finance the very expensive requirements in staff, buildings and equipment of education and research in the scientific disciplines. The third is that of providing the greatly increased numbers of students, many with homes far from the university, with such lodging and social accommodation as will give them some training in community living.

These problems have been met in the main, not as in Western Europe and North America, by the growth and development of older private colleges of higher education, but by the creation of large universities, founded, financed and to a varying extent controlled by the central government. In some countries of Latin America all the universities are under the direct control of the Minister of Education who not only appoints the Rector but has the last word in the nomination of professors. Argentina, Nicaragua, Honduras, Haiti, and Paraguay, are examples of virtual state control of this sort. In a second group, Brazil, Chile, Columbia and Venezuela, some of the universities are private—the Catholic universities common in Latin America are a special example of this class—and in these countries the universities are nominally autonomous. But the President of the Republic appoints the Rector (for a limited term, usually six years) and the Minister of Education presides at the Council in the State University of Brazil. Finally, there is a group of countries including Bolivia, Cuba, Mexico and Peru, in which the universities enjoy real autonomy in the sense that they appoint their own Rector, teaching and administrative staff. But even in this group their dependence on public money is paramount—I could not hear of any university that received less than 70 per cent of its income from the State—so that their independence is not complete. State universities are financed directly by the Ministry of Education. Private ones receive their grants by persuading their local senator to promote a bill in the legislature: the different senators who have a private university in their constituency usually combine together to promote a single bill giving an annual income to each one. So that the affairs of every university in Latin America come under the scrutiny of the legislature.

This is reflected in the constant promulgation of new laws affecting them. A political revolution—and Latin America indulges in these at frequent intervals—is often followed by new legislation altering the aims of universities as defined in their charters. Thus those of Argentina and Ecuador proclaim that it is their duty to foment

national consciousness and solve national problems (all professors must be Argentine citizens of long standing) and many others mention their task of serving the needs of society. This duty is, of course, acknowledged *de facto* if not *de jure* by all universities to-day.

There is one aspect of the relation between State and University in Latin America which moves an English visitor to envy and that is the lavish expenditure on buildings and equipment. At the University of Buenos Aires I visited the Dental School—a towering building of fourteen stories, equipped regardless of expense. It was erected some ten years ago at a cost in Pesos equivalent to 1½ million pounds sterling and at to-day's prices would cost three times as much. It accommodates over 2,000 students. The University of Concepción in Chile was founded in 1919 but a dozen years or so later the buildings were badly damaged by an earthquake. They have been largely rebuilt in a form of concrete claimed to be earthquake-proof, and their architecture combined with the artistic lay-out of the campus on which they are set provides a spectacle unequalled by any modern university buildings in this country. This princely public expenditure on university buildings appears to be a matter of national pride and prestige and they clearly have a much higher priority than here in the state programme of planning, higher than housing for example. Argentina and Chile both display the familiar spectacle of people deserting the country for large cities. In Santiago where the lack of lodging accommodation is acute I saw not far from its palatial hospital a slum of a thousand shacks, built by squatters on a piece of public land out of old packing cases and roofed with corrugated cardboard. They contained no sanitary fittings whatever, no water supplies save a single tap for the whole slum, and compared not very favourably with the mud huts of an Indian village. This slum was by no means unique and such conditions account for the health statistics of Chile: a very high incidence of tuberculosis and typhoid fever, an infant mortality of 250 per thousand births, ten times our figure (this was in 1944: it has since been halved by energetic health measures in clinics), an illegitimate birth rate of 25 per cent, and an expectation of life of forty-five years.

University organization is on familiar lines. They are divided into faculties containing a number of schools or institutes and these in turn have each a number of chairs. Many schools which in Britain would be mere members of large faculties have attained faculty status as they have in U.S.A. At the University of Chile, for example,

there are these faculties: Philosophy and Education (Philosophy is the usual term in Latin America for what we shall call the Faculty of Arts), Fine Arts, Law and Social Science, Commerce and Economics, Biological and Medical Science, Physical and Mathematical Sciences, Architecture, Music, Veterinary Science, Chemistry and Pharmacy, Odontology, Agriculture. Each faculty has its Dean, appointed (as a rule for three years) in some cases by his colleagues on the faculty, more commonly by the Rector, in a few universities by the Government (the President of the Republic or the Minister of Education). The Deans and the Sub-Deans of the different faculties (sometimes augmented by the heads of certain departments) form as a rule the Council of the university, its governing body, presided over by the Rector. I could not hear of a Council containing the considerable secular element which forms an important feature of the civic universities of Britain; and what we call the Senate or general assembly of professors, meets in most cases only occasionally for special purposes such as the election of a Rector. A feature in the government of many though not all of the universities of Latin America which seems strange to us, is that a representative of the students finds a place on the Council or the faculty or both. So does a representative of the alumni though this is paralleled in a number of university Councils in Great Britain. Student participation in the government of universities has of course a long history behind it and in Europe may be said to stem from Bologna, the oldest of all, with its division into different nations.

One method by which students in Latin America attempt to influence not only university but public policy is the students' strike, unfamiliar in England but common enough in other countries. I witnessed in the streets of Santiago a torchlight procession of dental students on strike in protest against a proposal of the Senate to admit sixty unqualified dental practitioners to the register of those authorized to practise. For some days the students refused to work at the Dental Hospital. The procession was escorted by a large body of soldiers armed with rifles, and all traffic in a principal street was stopped while the students, men and women in equal numbers, marched ten abreast. This seemed to be some sort of official recognition of the strike.

The powers of the Rector appear to vary widely. Some rectors have the autocratic powers that we associate with a college 'President' in the U.S.A., ability in effect to 'hire and fire' members of the staff,

and considerable financial responsibility. Though their appointment is usually for a limited term it is renewable. By common consent the G.O.M. of the Conference was the Rector of Concepción University, aged 82 and still full of energy, who had been its Rector continuously since it was founded in 1919. But in cases where the political power of the State is paramount the picture looks different. I had an interesting interview with the Rector of Buenos Aires. He presides over what must be one of the largest universities in the world with 53,000 students—about the same total as the pre-war figure for all the British establishments combined—in a country with one-third of our population, which maintains moreover five other state universities, some of considerable size. He had been recently appointed by the Minister of Education and, being a plastic surgeon by profession, continued to spend the whole of each morning working in his hospital.

There are some curious features in the relations between private and public universities in the same State. In Chile for example though the Catholic University of Santiago and the private University of Concepción train medical students, these have to take the examinations of the State University of Chile.

The conditions for the entry of students vary widely. The fees they pay are negligible or non-existent, less than £10 a year, and this holds good throughout Latin America for private as well as state universities: in the case of the former it justifies their support by public funds. In some state universities no matriculation or entrance examination is required other than a certificate of having completed the normal course of secondary school education—a modest standard. Everyone who desires to enter must be accepted—and this means a formidable flood of freshmen, reduced thereafter to more manageable proportions by failure in the first year examination. A similar state of affairs exists at many state colleges in the U.S.A., and at some European universities like the Sorbonne in Paris. At Buenos Aires the medical students number over 12,000, the dental students 2,500, figures which approach the total for all the schools in Great Britain. The courses are six and five years respectively and the numbers who reach the final examination have been reduced to 600 medical and 250 dental candidates. Even these figures are formidable by our standards in a country with three other medical and dental schools and only one-third of our population. The Dean expressed his opinion to me in these words: 'We are a democratic country and think it right that every boy or girl who wishes to become a doctor or

a dentist should be given a chance.' All this is a contrast to British practice and it involves a great deal of expensive accommodation and teaching for the foregone failures of the first year. Nevertheless the view is held by not a few that the single year of these failures gives them a civic sense, a training in community living, and an introduction to high thinking which are not a waste of time, and that elimination after this year provides a more reliable method of selection than the matriculation examinations, school reports, brief tests or briefer interviews by which entry to the British universities is at present regulated. The entry to a university like Buenos Aires is, of course, limited by parental means. Only about 2 per cent of students receive maintenance allowances or scholarships in contrast to the British ratio to-day of about 80 per cent.

The University of Chile presents a very different picture, more like conditions in Britain. All would-be medical students must submit to an entrance examination and tests conducted by a committee of professors nominated by the Faculty, and two-thirds of those applying are eliminated in this way. No personal interviews are held owing to lack of time. 120 students enter each year to which should be added another 45 receiving their training at the Catholic University or at Concepción but taking the examinations of the University of Chile. So that 160 to 170 doctors qualify each year, and this is considered to be the maximum number that can earn a living in the national health service. The entry of dental students is governed by similar conditions for the same reason, but there are other less-specialized faculties in the same University which do not hold a special entrance examination and accept students freely in the interests of higher education. It was interesting to observe that some science was taught in the Faculty of Philosophy and Education, and that this Faculty, housed in a separate building, maintained its own science laboratories for that purpose. In the same way the Faculty of Odontology housed its own laboratories for instruction in Chemistry and Physics. At Buenos Aires dental students received their instruction in all subjects of the curriculum, including the basic and pre-clinical sciences, within the Faculty of Odontology building and all their instructors had to have a dental qualification. They were all employed part-time and numbered about 500. These arrangements embody a conception of professional education once prevalent in this country but now obsolete though relics of it still exist here and there, e.g. in London. Even in the University of Chile, where the

conditions were closer to our own, instruction in anatomy was given by part-time teachers practising for the most part surgery in the rest of their time. And throughout Latin America the conception of whole-time teachers in medical and dental subjects has not yet been widely accepted.

The housing of students in halls of residence is exceptional in Latin America, though some exist, and the new University of Concepción provides this accommodation for 10 per cent of its students in one hall for men: it is about to build two more, one for men and one for women. On the other hand welfare services, including medical care and inspection, are being very widely adopted. It was startling to learn at Concepción that 10 per cent of the students are found on arrival, or subsequently, to have tubercular infection of the lungs.

Playing fields on the scale we provide for students here are unknown in Latin America, but many universities provide gymnasia containing courts for squash rackets and net-ball. I saw one in process of having its generous seating accommodation for spectators trebled and then learnt that these courts are frequently let for professional or amateur matches: the profits on these lettings pay the expenses of running the gymnasia and something over. I saw no student union buildings for the whole university, but each faculty provides its own common rooms for men and women and sometimes its own canteen.

Research plays a much smaller part in university work than it does here. Our University Grants Committee's annual reports show that about one-seventh of all university students are graduates engaged on research in preparation for a higher degree. Extra-university bodies such as the Department of Scientific and Industrial Research, the Medical Research Council, the Services and large industrial companies give substantial grants to universities for both capital and recurrent expenses in connexion with specific research projects. And, of course, whole-time staff—proportionately far more numerous here than there—are expected to devote much of their time and talents to investigation. When account is taken of all these factors it is probably conservative to estimate that at least a quarter of university resources in Britain are devoted to research. The corresponding estimates I was given for Latin America varied from 2 to 5 per cent but the Conference was clearly anxious to encourage more research in its constituent members.

If some of these remarks sound critical I should like to end on a

different note. I learnt much in South America. It has solved the problem of mixed social communities which in Africa, and not in Africa alone, is proving so intractable and so damaging to the prestige of the Western world. In Brazil large communities of Germans, Italians, Japanese, Negroes, Indians and mestizos (half-castes) live peacefully and with equal civic rights side by side with the descendants of the Portuguese settlers. And I came to realize how completely cosmopolitan and cognate is the outlook of those who have been trained in universities whatever the country they come from. It is difficult not to feel a stranger when you visit a country whose tongue you cannot comprehend. At Santiago we spoke half-a-dozen linguistic languages, but we all thought in the same idiom of ideas and felt completely at one with one another from the moment of our first encounter. Universities by their researches—atomic fission and the atom bomb are two obvious examples—have created many of the problems with which our world is confronted. They are enlarging knowledge more rapidly than wisdom can control it, so that the difficulties of human association threaten to get out of hand. But as these difficulties multiply men and women trained in universities will increasingly be called in to cope with them as experts, as administrators and as business executives. If, as I believe, their values and their modes of thought are much the same all over the world whatever curtains contract their intercourse, there is surely good hope for human societies at present struggling with the dangerous currents of a changing world.

UNIVERSITIES IN THE U.S.A.
Secondary School Characteristics

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THERE are about 1,400 degree-granting colleges and universities[1] in the United States (1,900 if the two-year junior or community colleges are included) and they vary so much that it is difficult to generalize about them. However, one fact is clear: they are, to a great extent, simply extensions of American high schools. The jump from high school to university is small, for many university practices and customs are similar to high-school practices and customs. Let us examine some of them in order to understand better why and how American universities differ from European universities.

First of all, the American undergraduate does not penetrate as deeply into his 'major field' as does his British counterpart. He often is not sufficiently grounded in such basic subjects as English and history to be able to devote all his time (or even a large part of it) to the subject that interests him most. Another reason is that he must take a great variety of subjects. There has been an increasing tendency to broaden the subject requirements owing to a popular belief that the 'well-rounded man' is needed more than the dyed-in-the-wool scholar. Hence in American universities the first two years are largely a continuation of high school with a smattering of English grammar and literature, history, languages, and perhaps some science and mathematics. Specialization does not usually begin until the third year. Therefore most sincere scholars become postgraduates before they feel that they are digging below the surface of their major subject.

Admission standards differ to a certain extent. Most universities are willing to admit the 'average' high-school student, and at least two have declared that any graduate of a high school can enter! Hardly more than half of the undergraduates get satisfactory grades

[1] In this article I use the term *university*, for convenience, to cover all degree-granting institutions. This is not illogical for the systems are extremely alike although the academic standards vary.

in enough courses so that they may receive a degree. Hence many undergraduates who should not have been admitted are forced to leave with the knowledge of having already had a serious failure in life.

Some of this wastage may consist of students transferring to another university, but some undergraduates fail so many courses that they are no longer eligible to receive a degree, others may lose interest or drop out because of a personal reason. Often part-time work competes with studying. A small percentage of students receive scholarships and student costs are high. Admission standards to graduate schools are higher, but even here mistakes are made.

Not only does a student take many different subjects, but he also has a varied list from which he chooses those subjects which satisfy the university's requirements and his own interests. Some of the standard subjects are Contemporary Civilization, American History, Introductory Chemistry, English Literature, College Algebra, Introduction to Sociology, Introduction to Economics, and Beginning French. Some universities offer degrees (including the Ph.D.) in such subjects as swimming, home economics, speech, radio, dramatics, photography, nursing, library service, journalism, industrial management, and television.

Usually a student must accumulate at least thirty credits in his major subject (about one-fourth of the total number required for a degree) and about twelve or eighteen credits in a minor subject. The minor may be closely related to the major, or it may be completely different. Opinions differ widely on what the relationship between major and minor subjects should be.

In universities where agricultural and technical courses predominate, such subjects as history and literature often suffer, for they are considered as 'service' courses and their teaching is on an inferior level most of the time so that a 'reasonable' number can pass the course. As is generally true in high school and university courses, if an instructor holds closely to his conception of what the standards of his course should be, many of his students may fail it. Then he will become unpopular, his classes will diminish in size, and he may get into difficulties with the university authorities. This is also true in some of our best-known universities. Few Americans are aware of this problem or the dangers involved.

Arts courses are frequently frowned upon by the majority of students, who are more interested in 'practical' studies which may

earn them money later on. It is a commonplace that science and mathematics students appear more serious and work harder. On the other hand much language teaching is on an elementary or intermediate level and few students ever learn a foreign language well.

The elective system was introduced by President Eliot of Harvard towards the turn of the century in a more general way than it had ever been used before. It permits a great freedom of choice in courses, but its benefits are still controversial. Students are often confused when trying to choose from the maze of course titles. They often do not know what to take. Hence such considerations as the time the course is given, whether or not the instructor is 'easy', and the difficulty of the subject itself often determine their choice. This is one practice which does not come from high school, but it has been introduced in some modern high schools. It is clear that Thomas Jefferson's liberal conception of a university had much influence on the development of the American university and we are more German than English in our emphasis on the freedom of the student.

Student supervision ranges from imitations of the Oxford-Cambridge tutorial system (e.g., at Harvard and Princeton) to a minimum of supervision by the faculty and deans. Often an instructor is designated as a student's advisor. Or there may be an educational specialist who is trained in advisement. In small colleges the head of each department may advise students 'majoring' in his field. In a few places students who work for honours get closer attention. Freedom is restricted more than the students indicate by their gay exterior and active social life. Such practices as taking attendance, reprimands for missing class, required reading designated by chapter and verse, early curfews for freshmen, punishment for cheating at examinations, and so forth, are popular.

The number of tests or examinations in each course is determined by the instructor. Students usually prefer quizzes once a week to exams which may require the ability to retain information over a long period. Only postgraduates are allowed to go as long as an academic year without examinations.

Reference to what the student 'likes' may seem strange, but this factor has a great influence on the curriculum and teaching in America. Sometimes the teacher is evaluated by the students! This is more possible in state universities where it may or may not be compulsory. The results are usually revealed only to the instructor. Many naturally dislike this innovation.

Grading ordinarily breaks down into five categories: A is excellent, B good, C fair, D passing, and E or F failure. Credit is not given for a D or failing grade. Honours given to students with high average grades do not have the importance they have in Britain, and are seldom ever mentioned. Students do not aim for honours or 'pass'.

Classes run from eight to sixteen weeks, and from one to five (usually three) hours a week. The student may attend a course three days a week for one hour, and at the end of term he receives a grade which goes down on his transcript (the registrar's record) of grades and which determines whether he receives credits for the course. Three credits will probably be given for this course, and when the student accumulates 120 or 130 or so credits he receives the bachelor's degree, provided his grades are satisfactory and he has fulfilled the requirements of his department. The student normally takes four or more courses a term, two terms a year, for four years. Again, we have a practice that is similar to high-school procedure.

Lecturing is not as common as in British universities, although it is used to a great extent by the large universities. Even where there are lectures, however, the lecturer is often interrupted by questions, and an informal atmosphere prevails. Large classes are sometimes broken up into smaller groups headed by assistants to the professor. In this way the professor may lecture once a week and the assistants will meet their groups several times a week to lead discussions and answer questions. Teaching methods similar to those used in high school are often employed. The term 'classroom' is more common than 'lecture hall'. There is note-taking at lectures and often professors give the same lectures every year so that notes of former students can be used to advantage. The practice of mimeographing notes and selling them to other students has occasionally arisen.

Tests often take the character of high-school tests. They may consist of true and false questions, multiple-choice questions, 'fill-in blanks', or some other form of factual quiz. Teachers who give 'essay questions' are often unpopular.

Unfortunately there are no U.S. government scholarships (except the 'Fulbrights' for overseas students) and no system of scholarships that discovers and trains an intellectual élite the way the British system does. The high cost of tuition forces many students into part-time work during the academic year and full-time work during the long vacation. The natural result is that too much time is taken

away from studies. Often students begin working when in high school and simply continue this practice through their university career.

Many students live 'off the campus' (especially in the redbrick universities), but they do not lose the social advantages of university life, for they engage in clubs, athletics, etc. Extracurricular activity, as in high school, causes studies to be neglected until tests are imminent when a great deal of 'cramming' is done. Hence instructors try to increase the frequency of tests.

American students want a degree so they can get a better job, improved social standing, prestige, and so on, and they are encouraged by parents, teachers, and others to think this way. Few are scholars in the traditional sense. Anyone interested in truth for its own sake or an academic subject for its own sake is looked at with great curiosity.

Throughout the educational system there is less emphasis on effective writing of English than there is here. Few essays are written. Postgraduate students in literature or social studies often find themselves handicapped because of their inability to write well.

As in high school, classes are sprinkled through the day so that a student may spend almost a full day alternating classes with study hours or other activities.

After the war the universities expanded rapidly to permit the large backlog of students to enter along with the war veterans who were aided by a generous allotment from the government. The immediate result was a fall in standards, for classes became too large and teaching was often inferior. Many high-school teachers moved up into university teaching to fill the need.

Most instructors teach too many hours a week. Some universities limit the number of hours to fifteen or less but the instructors constantly seek other sources of income through extension lecturing, evening schools, special lectures, and so forth. Moreover, an instructor may be asked to teach a wide variety of courses at the same time. A good example might be: American history, Russian history, contemporary world politics, and a seminar in Pacific-American relations—all in the same term.

Faculty members endeavour to be 'popular' with the students so their classes will be large and they will be esteemed highly by the university community. Students seldom take a class without first investigating the reputation of the teacher to discover whether he is 'easy' or 'hard', formal or informal, gives frequent quizzes or none

at all, speaks well, etc. The importance of being 'liked' which is so common in American business society is therefore carried over into the classroom and lecture room.

High school and university teachers usually strive to be objective and impartial in their lectures and comments. This is often due to a fear of being labelled politically, religiously, or philosophically. The result often is that professors profess nothing.

Usually every campus organization, such as international relations clubs, debating societies, and the like, has an instructor as moderator or advisor. University radio stations are common and serve as excellent training grounds for potential writers and actors as well as reporting and entertaining media for the university community.

There is keen competition among students for the title of 'Big Man on Campus' or 'The Most Popular'. A 'B.M.O.C.' is usually a big man physically who is extremely competent in athletics and is well-known and liked. He may or may not be a scholar. Usually he is not.

There is a big gap between the serious student and the rest who strive to be 'friendly all-round Joes'. The serious student is often labelled a 'grind' and may be ostracized by the others. This tends to reduce the number of 'grinds', for few wish to be unpopular. This, too, grows out of high school. There is much drinking among students, but most of it is not very dangerous. They often congregate in neighbourhood taverns to consume large quantities of beer and sing college songs.

Although a certain amount of lip-service is given to the importance of good conduct there is more stress on the development of character in British universities. In America the educated man is often confused with the well-informed man. This is true even in graduate schools, where instruction is superior to undergraduate instruction (seminars and classes are conducted well). There is too much emphasis on 'research' and not enough on thought. This helps to increase the number of large dissertations that are read by no one except the examining board. The lectures and books of university teachers reveal this tendency towards factual and statistical work. Moreover, attempts to supplement their income by writing articles for popular publications often result in fewer original contributions to the academic field.

Often students will leave the university without having considered the fundamental problems of life or having come to any consistent philosophy of life, for the prospect of a true and false quiz the next

day does not stimulate meditation on deeper problems. In this important respect most American universities must be considered a failure. However, there is an encouraging movement towards courses in civilization, group discussions of 'great books', and so on, which may improve the situation. Small church colleges are often better than large universities in this respect. Mr. Robert Hutchin's *The Higher Learning in America* exemplifies the trend among thoughtful educators towards what Sir Walter Moberly calls classical humanism, especially in his attack on material objectives in universities.

Underneath all these factors which make American institutions of higher education so different from the universities of other countries lies the theory that society has the obligation to educate each person. The assumption that everyone can be educated is the root of American educational philosophy. Hence the attainment of diplomas and degrees, speedily and efficiently, has become the main goal of many Americans.

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EDWARD ARNOLD

SCIENCE IN POLAND BEFORE AND AFTER THE WAR

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Professor of Mathematics in the University of London

In September 1953 I attended, by kind invitation, the Congress of Polish mathematicians in Warsaw. I had spent nearly six months studying in Poland during the winter of 1938 and 1939, and I was naturally very anxious to find out at first hand how conditions for study and research compared with those in the years immediately preceding the war. It was my very pleasant experience to meet again many mathematicians whom I had known before the war, and I was able to have many very interesting and informative conversations with them. I should like, therefore, to add my own impressions to those given in the interesting articles on Higher Education in Poland.[1]

In the first place it is necessary to emphasize the enormous losses suffered by the Poles during the war. About a quarter of the Polish mathematicians lost their lives, the majority at the hands of the Gestapo in almost unbelievable circumstances. Very many of those who died were young men who had yet to make their full contribution to science, and they included many of Poland's most brilliant mathematicians. Losses of this description will be keenly felt for a long time. However, since the war great efforts have been made to restore Polish science and culture and what impressed me most was the vigour of the Polish mathematical school and its very close connexion with that existing before the war.

I should like to begin by making a few comments on some of the views expressed by Mr. Stanislaw Seliga in his article in the UNIVERSITIES QUARTERLY in August 1953, since these views are typical of those one often hears. He made the following assertions; (i) that most university teachers work very hard often combining several occupations; (ii) not much time is left for research, which must in any case be conducted in the light of Marxist-Leninism; (iii) that research is normally produced by a closely co-ordinated team and that this method provides a convenient method of political control; (iv) that

[1] B. Simon, 'Higher Education in Poland', *Universities Quarterly*, Vol. 7, No. 2. Stanislaw R. Seliga, 'Some Darker Aspects of Higher Education in Poland', ibid., Vol. 7, No. 4.

contact with the West is very limited, as such contact is not encouraged by the régime.

It is quite true that university teachers work very hard and that many combine several occupations, but it should be made clear that, with rare exceptions, these occupations are all of an academic nature, such as secretaryships of learned societies, editorships of journals and other scientific publications, and all these duties would fall to university teachers in this country. The difference is that in Poland they carry a salary instead of being purely honorary as here. I spoke to several thus employed, and in every case their reasons were based on the urgency of the work rather than on the need for additional salary.

The second and third assertions are much more serious and all too commonly held. On my last visit I was particularly anxious to see whether there was any truth in allegations of this nature. In spite of the fact that Polish scientists work very hard, much very good mathematics is being published in Poland and there is certainly no evidence in the publications of an attempt to impose any particular political theory. Indeed the emphasis is on the reconstruction of the mathematical school and the continuity of Polish mathematics. Research work in mathematics falls into two categories. There is original research on fundamental problems, and work on the applications of mathematics. The former is a highly individual matter, and while much collaboration does take place, the essential factor is the individual approach. The latter type of research on the other hand is best performed by teams of workers. This work is often occasioned by some outside requirements, the techniques required are known and the problem is to plan the work involved. Both types of mathematical work are carried out in all countries in a similar manner and the pattern in other sciences is much the same. It would be a serious criticism of Polish mathematics if it could be maintained that fundamental research was being neglected. This, however, is certainly not true, for their publications contain much fundamental work. Naturally, as in any country where the cost of research is born by the State, the Government is very interested in scientific research but it does not attempt to plan the work itself. All plans for research are drawn up by the scientists themselves acting under the aegis of the various Academies. I was interested to find out if the philosophy of Marxist-Leninism did reflect on mathematical research, and so spoke to a number of young mathematicians whose political

views agreed with those of the leading political party. They were very emphatic in their opinion that in order to secure scientific progress with the attendant application to industry it was essential to carry out research in all branches of sciences. It was not possible to develop successfully some sciences at the expense of others and, to be really successful, it was necessary to have a balanced programme. I do not know how far this view could be attributed to this political outlook, but it is a conclusion with which nearly every scientist would concur wholeheartedly, whatever his political opinion.

It is quite true that much could be done to improve contact between British and Polish mathematicians, but here again the belief that the fault lies entirely with the Poles is untrue. There were present at the mathematical congress a number of mathematicians from Western Europe and the kindness shown to us by all was in itself evidence of their desire for improving their contact with us. We had ample opportunity for meeting and discussing problems with Polish mathematicians and all expressed a keen interest in the work of British mathematicians. However, there were one or two who told me that they have been in regular correspondence with mathematicians in the United States but had found recently that their letters were not answered.

Just before leaving Poland I had a long conversation with Professor Casimir Kuratowski, the director of the mathematical institute in Warsaw, very largely on the question of improving contacts between Polish and British mathematicians. He expressed himself most sincerely on the desire of Polish mathematicians for improved relations with British mathematicians. While we both felt that for the fullest co-operation a period of real peace was needed, there were many things which could be done now. For example, Polish mathematicians could be invited here to give lectures and conduct seminars in Great Britain. They would be very pleased to come and the only obstacle seems to be lack of funds for this purpose by British institutions. It would be a great thing for British scholarship if some of these difficulties could be overcome, for Polish scholarship has a long tradition and Polish scholars to-day are exerting great efforts to develop their science in a manner worthy of this tradition.

REFLECTIONS OF A SOCIAL TECHNOLOGIST

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ACCORDING to the timetable I teach economics, politics, sociology, and a small dose of history. In principle, of course, this means economics, politics and so on as applied to the anatomizing of industrial relations. But since the College boasts no sociologist, and its economists come to me before they have well begun their economics, I find myself teaching a good part of what other places would probably call the 'core curriculum' of these subjects as well. The timetable does not say that I teach cultural anthropology. But if anthropology is what the anthropologists say it is, a lot of what I go in for has a suspicious resemblance to it. I have always avoided psychology, of which I am scared stiff. However, next year the mounting waves of child care and family case-work will finally engulf the half of a psychologist who struggles to keep up with Industrial Relations as well as with Social Science. The hungry class will look up, swollen with rank wind and thoroughly unfed. Though I feel about psychology rather what the hero in Orwell's *1984* felt about rats *someone* must fill the gap.

And, of course, in a department like mine you leap from one level of teaching to another like a gazelle. At nine o'clock you are pointing out to a student what nonsense Alfred Marshall's epigoni made of the theory of competition, particularly as applied to the labour market. At ten you are explaining the anatomy and physiology of the Transport and General Workers' Union. And at eleven, round the coffee, you get down to the clinical details of the latest bellyache at Margam or B.O.A.C.

Mind you, I am not complaining. Like Ron (of the B.B.C.) I like it. And somehow you get by. They always used to tell me that he who has once mastered the classics can learn anything. I never got further than Classical Honour Moderations; but it seems to have been enough. I doubt whether the students are getting quite such a liberal education as I am myself. But then, with a brand new syllabus to run in, the last thing on earth I want is students. Half-a-dozen guinea-pigs per annum, perhaps. But mass production only from 1956. And

meantime, after all those years of economists' squabbles, it is fun to be washing someone else's dirty linen for a change. There we are, a stalwart band of Talcott Parsons's men, whetting our knives on Offa's Dyke for the last fell swoop on the reactionaries of the London School. The Harvard of the Celtic fringe, as you might say.

Well, well. But let us be serious. I suppose in a way my case is a limiting one. First, because it occurs in Wales. The University of Wales is scattered over an area such that it is quicker for me to travel to Amsterdam, Louvain, or even (if you watch the connexions carefully) to Rome, than to Bangor. And it takes twice as long to Aberystwyth and three times as long to Bangor as to Paris or to Dublin. Each Welsh college is thrown much on its own, and staffs tend to be cut up into uneconomically small packets.

Then there are the factors which apply over the country as a whole. For instance, social science and technology still attract only a tenth of the finance devoted to natural science subjects. As between the basic social science subjects, those longer established, economics and politics, grab the lion's share. In the N.I.E.S.R.'s Register of Research in the Social Sciences for 1953, economics and related subjects account for over a third of the projects; four to six times as many as sociology, psychology, or anthropology. One might well ask whether this truly reflects the importance in the modern world of human as apart from economic relations. What is more pertinent from my point of view is the way this lack of balance reflects itself in teaching staffs. If you happen, like me, to teach a subject whose roots are in psychology or sociology as well as in economics, you may find yourself rather poorly served. My predecessors made the best of a bad job by concentrating on the economic aspects of industrial relations. I refuse to teach anything less than the whole truth about industrial relations; but that means that my colleagues and I have often to set to and provide basic teaching in the neglected branches of social science ourselves.

And then, of course, there is the same lack of balance between basic teaching or research on the one hand and development of technology on the other in the social as in the natural sciences. I know the N.I.E.S.R. Register is not a very precise test of this, since its classifications were drawn up for other purposes. But it is I think significant that in the Register projects in such fields as economics, psychology or anthropology outnumber those in fields such as family studies (which I think is a better name than demography), local

community studies, or industrial relations by three or four to one; depending on just where you draw the line.

There then I am, teaching a branch of social as apart from natural science technology: one which requires a broad base in all the basic social sciences, including those hitherto under-developed: bearing in mind that even the most developed of social sciences is under-developed compared to natural science: and all this in the federal University of Wales, where the division of labour in all subjects tends to be too small. The last of these factors is the least, for Wales has shown itself perfectly capable of concentrating its resources on one or two adequate-sized departments for all four of its colleges in, precisely, the technological subjects.

Let me in fact point the contrast between the natural science technologies and my branch of social technology by an example from Cardiff itself. The Welsh National School of Medicine, with its related departments of anatomy and physiology in my college, has some sixty-seven posts carrying the title of professor or lecturer, together with a large number of others carrying such titles as Recognized Clinical Teacher. I suppose most people, at least in universities, would agree that the mind of man is as complex as his body. But the miserable student who proposes to study, not the Body of Man on a Marble Slab, but the Mind of Man at Work, will find set aside for his instruction four posts carrying titles like these; counting, that is, the heroine in the Social Science Department who single-handedly teaches all the art and mystery of personnel management. Of course, we scrape together quite a lot of teaching from other sources as well. There are half-timers, quarter-timers, givers of an odd hour a week. But there are very few even of these; nothing like those armies of Recognized Clinical Teachers in the medical school. And remember that, whereas the anatomists or physiologists have a solid foundation in the departments of physics, chemistry, botany, and zoology, we often have to turn to and lay the concrete in to the trenches ourselves.

It is frankly impossible, in these circumstances, to maintain the division of labour, the specialization and detailed familiarity with a chosen field, needed to keep university teaching and research at a properly high level. If we get by, it is partly because we teach only to pass standard, and partly because—precisely because of its past under-development—the subject is in a stage corresponding to that of the apothecaries and barber-surgeons in medicine. Also, of course,

because in the struggle to keep up with current findings even in so under-developed a subject, research tends to go by the board. I started a couple of years ago to open up a completely new field of study, on which so far as I know no one else in this country is working, and very few anywhere else. By this time I ought to be well away into detailed work on it; whereas in fact I am stuck at the stage of general survey. The Department will shortly be starting a large-scale study in South Wales, which I think should prove important; but the condition of its success is that it should be carried out, and above all led, by staff specifically for that purpose, and only lightly involved in teaching.

Where then should we be going next? Some points are clear enough. I hope that at the next quinquennial revision of grants the U.G.C. will pay special attention to redressing the balance among the basic social science departments. Let us have a moratorium on economics, until something more has been done to fill out the deficiencies in sociology, psychology, and the rest. That needs to be done above all in those colleges, like Cardiff, which have departments of social technology depending for their foundations on a full range of basic social science teaching: just as the medical schools depend for their foundations on a full range of teaching in physics, chemistry, and biology. And I hope that neither the U.G.C. nor any university will countenance setting up a new department in social technology in future in any place where there is not, or at any rate where there is not likely soon to be, a full range of basic teaching to support it.

In a way, I suppose, it would come to the same thing if my department were allowed to recruit a sociologist or psychologist of its own. That is how the Education Department has tended to work; education being the only branch of social technology powerful enough, academically and politically, to be anywhere near adequately staffed. But that would be only 'in a way' the same thing. I do in fact want a sociologist in my department; but to analyse industrial relations from the sociological point of view, not to teach basic sociology. Social technology is a rapidly growing field, as witness the widening range of subjects covered in Social Science departments. It is sheer waste, and a diversion from their proper job, for departments of social technology to give, each separately, the basic teaching common to them all; as wasteful as for anatomy departments to

teach physics and chemistry. And in any case the basic social sciences deserve a full range of teaching staff each in their own right.

That would get rid right away of one of the biggest reasons for overstrain. Departments like mine could then concentrate on their own proper job. But there would still remain the contrast between the four of us who are supposed to teach industrial relations at the anatomy-and-physiology and clinical level (counting in, that is, the Social Science Department's solitary personnel manager) and the sixty-seven corresponding posts in the medical departments. We could still not specialize adequately. And so I hope that some attention will also be given to building up the teaching teams in social technology departments. I dare say some of the existing departments ought never to have been born. It is arguable that some might even to-day be better put quietly away. When the late Montague Burton was founding the half-dozen chairs of International Relations and Industrial Relations of which I hold one, neither he nor anyone else seems to have paid much attention to the economies of scale which are so important in making the best of studies of that kind. However, that particular argument will probably not be taken too seriously.

To abolish a grant-aided and still more an endowed department is one of those things which universities do not do. And the need for social, as for natural science, technologists is probably in fact great enough to justify all the existing departments, if only they can be brought up to a reasonable size.

There is a minimum size for them, if they are to handle teaching all the way through the anatomy and clinical stages; probably, judging from my own experience, about eight or nine. But there is also a maximum, and it is probably not much larger. The job of a department like mine is to turn out not specialists in this or that aspect of management practice, but general practitioners who can see a problem whole, in all its aspects, each in its proper relation to the rest, and can act from that point. They may become specialists afterwards; but they must become general practitioners first. And I suspect that they will pick up the general practitioner approach more easily if they are taught by teachers who not merely were themselves trained in it—which in any case very few of those teaching to-day ever were—but are actually practising it now. From teachers, that is, whose daily experience in teaching and research makes them concerned with industrial relations (or whatever the subject may be) as a whole. And that, I think, means preferably teachers who belong

to a department small enough to constitute a face to face group; one where everyone is to some extent in on everything. Not more than, say, a dozen to fifteen. Some of the doctors used to much bigger schools than this, may disagree with this idea of a maximum size for a teaching department in either their own kind of technology or mine. But, judging by the remarks they pass on the sub-division and mechanization of medicine (including medical teaching) I think a great many of them will agree with it.

I do not mean, of course, that all research or even all teaching in a subject like industrial relations should be confined within the limits of small teaching departments of this kind. There can be research institutes as well; we already have several excellent ones in the industrial relations world, and far be it from me to suggest that they be abolished. And if an economist wishes to investigate his particular aspect of industrial relations, he can perfectly well do it from within the limits of his own economics department. And some even of the teaching of a social technology can and should be done by outside specialists. But I stand firm on the idea that the core of any such teaching should be provided by departments, for each main branch of social technology, with a staff of about eight to fifteen or sixteen. No fewer, but also no more. If the number of students grows so that even fifteen or sixteen staff are overloaded, the time has come to open a new department elsewhere.

Finally, the efficiency of a department of social technology depends on its horizontal relation with other departments of the same kind, as well as on its own constitution and its vertical relation to departments of basic social science. Departments of engineering, mining, or metallurgy benefit from one another's presence in the same college, exchange courses, and so on. So do or should departments of social technology. Family problems—education—the design of local communities—public administration—industrial administration—international relations—here is a whole series of branches of social technology, each already constituted as a teaching subject in one or more universities, all facing similar problems and using similar methods, and each of considerable relevance to the others. Could we perhaps have a little more attention to the constitution not merely of departments but of faculties of social technology, in which each of a series of departments could support the rest?

THE NEED FOR RECONSTITUTION IN THE CIVIC UNIVERSITIES

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THE need to introduce various changes in the constitution of the British universities of nineteenth-century foundation is a frequent matter of discussion, whether printed or spoken, on the present state of these centres of learning. Attention has chiefly been directed to the cumbersome and grandiose structure of the corporate body of these universities, and especially have the usefulness of their Courts and Councils been called in question. The existing position has, for instance, been fully described by the author of *Red Brick University*, and his comments and criticisms are essential reading on this matter.[1] D. W. Brogan, in his critique of this book, says 'even the absurd systems of government described by "Bruce Truscot" could be altered if there was a vigorous Redbrick opinion against them'.[2] This is a challenge, and the writer of the present paper, in offering the outlines for a thorough-going reformation of Redbrick government, hopes that vigorous constructive opinion will indeed not be long in forming itself on this very important matter.

Before attempting criticism or suggestion, it may be well to summarize the existing chain of command in Redbrick. The Court is, in principle, the highest body of control and consists of several hundred members representative of many organizations, learned bodies, local authorities and heads of secondary schools, as well as of actual teaching members and graduates of the university. The most potent of governing bodies is the Council which may consist of up to thirty members about half of whom will be city aldermen or councillors, and the other half professors representing the Senate and various faculties as well as a few delegates of Convocation: the body of the university's own graduates. The Council controls university affairs of

[1] Bruce Truscot, *Red Brick University*, Pelican Books, 1950. (The present article was written before the identity of Bruce Truscot became known.)
[2] D. W. Brogan, 'Redbrick Revisited—I', *The Cambridge Journal*, December 1951, p. 139.

all kinds and expenditure often down to matters of five pounds. The purely academic organization begins at the next stage down, and is called the Senate. This body is composed entirely of the professors and a very few other senior persons. Below the Senate are the various Faculty Boards (Arts, Science, Medicine, Law, etc.). Each of these boards, known for short as Faculties, may consist of thirty to fifty members who are again the relevant professors in addition to other heads of departments and a small number of co-opted members of the rest of the teaching establishment. Subordinate to each Faculty are a number of Boards of Studies comprising all the teaching members of a group of allied departments or of one large school. A Board of Studies may initiate a recommendation such as for a change in syllabus, a financial grant, or the appointment of external examiners, but it can do no more, and everything must pass to the Faculty. In most cases the Faculty is again only a recommending body, and after numerous people have expressed at length their views on a great variety of subjects, the bulk of the business is sent on to the Senate often for eventual decision by the Council after much further discussion and suspicious scrutiny. Each Faculty frequently sets up committees to report on various matters, and the Senate possesses a number of permanent committees which sift and investigate specific subjects. The Council, Senate and the Faculties meet twice, perhaps three times, only in each term so that it is easily understood what delay is involved in effecting any measure initiated by a Board of Studies, or a recommendation by an appointments committee. It can further be appreciated how great is the load of petty detail and of paper work that is involved in the movement of business up and down the Redbrick glacis.

In respect of government, the civic universities might be described as consisting of a series of passive examining chambers of permanent members surmounted by a board of management: The Council. 'Bruce Truscott' must, however, be read on this subject.

The unwieldiness and the delays of the organization in the civic universities are not, in the present writer's opinion, the most significant objections to the existing state of affairs; the fault lies deeper and it is here proposed to enumerate three major criticisms:

(1) The Council-Senate-Faculty system amounts to a changeless bureaucracy allowing every encouragement to its members, the great majority of whom are permanent and sit in two of these chambers, to forsake scholarship for token-administration, or at the

other extreme, to shun such university affairs as are open to them as being tedious and trivial.

(2) A teaching/research department, or group of interrelated departments, may often be stultified by lack of support or appreciation from the Faculty or by the lack of prestige of that Faculty within the university as a whole. Especially do the Arts faculties enwrap the most diverse disciplines, the more modern and scientific of which are often at the mercy of uninformed or obstructionist opinion at Faculty meetings.

(3) There is now, probably more than at any time in the last half-century, a feeling that the civic universities are not integrated self-developing societies devoted to learning, but only employing educational institutions.

It is suggested that there is at least one means which would go a very long way to remedy, simultaneously, all these three criticisms, and many others that might be brought forward. The means would be the introduction of an electoral or 'jury' system for the governance of the university both for external and business affairs no less than for matters of internal organization and for teaching and research.

The electoral system assumes that all graduates within the university are educated persons, in addition to being specialists, and that therefore they should be prepared to undertake responsibilities towards their society other than those merely within their special scholastic fields. At the same time, the electoral system prevents anyone from being over-taxed, or, even more important, from over-assuming, in university affairs, and it ensures a constant supply of fresh minds to the university's interests and problems. By the removal of large chambers or committees, the electoral system places honour and responsibility, for a short set term, in the hands of men and women chosen by their fellows for their personal qualities. None of the civic universities is too small to operate an electoral system of this kind.

Some consideration of how such an electoral system would overcome the faults particularized in the three criticisms set out above will now be attempted. For the first, it should bring about the disappearance of Senate and Faculty, in addition to higher bodies, as now understood, but in any case the possibility of sectional or individual long-term ascendancy would be removed. In addition, a great stimulation in interest towards the university would be forth-

coming from those who hold back from the endless deliberations and formalities so redolent of a past age.

It is under the other two points of criticism that a clearer view may be offered of the reformed university. The second point embraced the problem of how the internal teaching/research policy might best be directed, and the third raised the question as to what the composition of the university as a corporation in law ought essentially to include. With regard to internal policy, the electoral system would make possible the more active functioning of groups of interconnected departments (i.e. Boards of Studies) which would stand in direct relationship to a General Board of some twelve members. The Boards of Studies would severally include all teaching and research graduates on the university establishment, and the General Board would consist of elected persons from the same source nominated through a scheme of different departmental grouping so that the responsibility rested on the individual unsupported by bloc interests. The members of the General Board would serve, individually, for a fixed period of about two years, and would be ineligible for re-election for a somewhat longer period. The General Board would meet weekly, and each Board of Studies at least twice in each term.

The external and more general affairs of the university might well be the responsibility of a Senate of not more than forty members. It would seem desirable that the Senate should include not only chosen members of the teaching establishment, but also an elected body of the university's own graduates, being masters or doctors. It would indeed speak badly for the university if such a body of its own graduates was not to be found among men of standing in the city and on the city council. Senators, from whatever source, might serve a slightly longer period than members of the General Board, but not more than three members of the latter should be enabled to sit at the same time in the Senate. The Senate should also meet weekly so that delays in transacting business could be reduced to a minimum. It seems possible that the Senate should elect, from among the professors, the Vice-Chancellor who would hold office for two or three years.

The General Board, which would be responsible for all educational matters, should be paralleled by certain other boards standing directly below the Senate. Of these, the Finance Board would advise the Senate on overall income and expenditure policy but the Senate would make an annual block grant to the General Board for its own

distribution to departments and schools and for its own use in purely academic contingencies. The Finance Board should be of not more than ten members, say six from the Senate, two from the General Board and two co-opted, the latter being presumably financial experts from the city. There is a great need for a somewhat similarly constituted Buildings Board to manage everything to do with building policy, repairs, alterations, and general fittings, and to overlook the actual putting into effect of its orders. The hiatus between directive and fulfilling action is notorious in the existing system.

A Board of Research Studies might deal with acceptance for research degrees and individual applications for research grants, but not research policy in departments which is the affair of the General Board having the distribution of departmental grants.

The Library, both central and dispersed amongst departments, should be the chief glory and care of every university, and deserves a board of equivalent standing to the others mentioned. This might well be recruited to a fixed number of twelve or sixteen directly from the Boards of Studies working by rota to appoint representatives. It goes without saying that appointment to all these boards would be for some two years only, and that individuals would be debarred from plurality of representation with certain exceptions as in the case of the General Board and its representatives on others.

The exact relationship between the General Board and the Senate, and the question as to whether major university policy should be enacted only after discussion and ballot by a congregation, and the composition of such a body, cannot be discussed here, for the present article is concerned only with certain problems and positive suggestions. It does not attempt to offer any complete master scheme, nor would this ever be desirable if it be allowed that each university should order the details of its own constitution. There are, however, certain further matters of administration which should be mentioned, for, in the kind of reform here outlined, various advantages would certainly accrue. In the first place, through the strengthening of the Boards of Studies, in which could be transacted the mass of business at present dragged at least as far as the Faculty, the office of Dean of the Faculty could disappear. This office is a grievous burden to the true scholar and teacher, but a fond perch for the bureaucrat. Students, who are now dealt with in large numbers by the Deans and their assistants, would be advised, and overlooked, by tutors (*in loco parentis*) recruited from the teaching staff, to each of whom only

NOVEMBER

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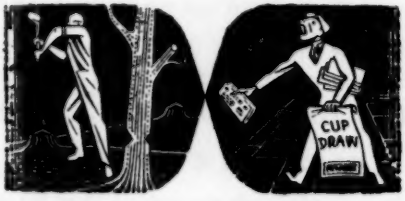
To the townsman, the sounds of winter are not very different from the sounds of summer. The pneumatic drill does not alter its note as the evenings draw in ; the cry of the newsvendor is not, like that of the peewit, stilled by an unfathomable impulse to migrate. But in the country the two seasons make very different impacts on the ear. Summer is never silent. Most of its sounds, like those on Prospero's island, "give delight and hurt not", though from this category we must exclude those made by wasps and thunderstorms.

Winter has a much more limited repertoire. Perhaps it is because they so often present themselves against a background of silence that we acquire a relish for its noises. The ring of an axe in the woods : the huntsman's horn across the valley : the grating, confidential call of partridges settling down for the night—when we grumble about the winter we do not grumble about these. And though writers, seeking to create a cheerless and forlorn atmosphere, often invoke the moaning of the wind in the eaves, not even the most provocative of them has attempted to suggest that this sound is half so dispiriting as the patter of rain on the roof of the cricket pavilion.



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a manageable number would be allotted. Instead of many deans and their secretarial offices, there would be a Secretary to the General Board, and under his jurisdiction should come some proportion of the clerical staff now in the Registrar's organization. The existence of an active and frequently meeting General Board and Senate having in attendance and at their disposal the functionaries of the university, would greatly stimulate the efficient running of the whole concern and drastically reduce the number of special committees that are the bane of the present-day system.

Enough has been said to show the nature of a system of university government which cannot be faultless but which, judging from living examples, is superior to any other system so far devised. It is sometimes pleaded that there is now too much ordinary and extraordinary business on hand for the proper consideration of university reconstitution, but it must be borne in mind that, with present delays and shortages, there is actually at present less academic stirring than there ought to be later on when the universites are fully implementing their new programmes.

A true concern for these problems must surely spring from a belief that the British civic universities have many centuries before them. How long will the historian of half a millenium hence judge the infant stage of these universities to have been? Will it have been five decades or more than twice that number? We stand on trial.

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THE BEGINNINGS OF GRADUATE EDUCATION IN AMERICA. *By* RICHARD J. STORR. (University of Chicago Press. 37*s.* 6*d.*)

Mr. Storr is an assistant professor of history in the University of Chicago, and this book is the result of historical research carried out by him with the encouragement and guidance of Professor A. M. Schlesinger. It has been written to correct the tendency to assume that there was no graduate education in the U.S.A. before the Civil War, and to destroy the legend that graduate education there 'meant little or nothing until Johns Hopkins burst upon the country'. Recognizing that revolutionary reforms of this kind do not happen suddenly as if by some process of 'spontaneous generation', Mr. Storr set to work to examine the pre-Civil War history of certain colleges to find out what evidence there was of pioneer attempts to promote post-graduate study. As a result of much patient and thoughtful investigation, he has been able to shed new light on a neglected phase of American educational history; and in this book he has succeeded admirably in piecing together what he describes as 'a record of the awakening which led to the first American experiments with graduate education in the arts and sciences and of many efforts to secure and organize the requisite talent and funds'. It is a comparatively short book of 134 pages, followed by a detailed bibliography and some 37 pages of carefully documented notes; and the author has wisely limited his objective, restricting himself to proposals and projects which can properly be regarded as anticipating modern graduate schools of arts and sciences. Deliberately concentrating on this particular target, he seldom refers to wider issues—intellectual, social or economic; and purposely refrains from discussions of contributions to advanced scholarship during the period that do not fall within the ambit of his theme—graduate education in college or university.

During the pre-Civil War period one of the main stumbling blocks across the path of advance was the unearned M.A., and a complacent acceptance of its adequacy as the hall-mark of a complete university education. In one of his notes Mr. Storr remarks that the University of Georgetown was an early exception to the normal practice of awarding the M.A. without further study three years after graduation, and he adds unkindly: 'It may be significant that the

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earned M.A. appeared in the announcement of an institution which did not have its taproots in the English universities.' The struggle against this complacency is largely a story of imaginative leadership by a few outstanding individuals. Just as in the early stages public education in the U.S.A. owed much to the advocacy of strong personalities like Horace Mann, Henry Barnard, Caleb Mills and Calvin Wiley, so in the field of university education we find progress achieved by the endeavours of such men as Thomas Jefferson, George Ticknor, Benjamin Pierce and Leonidas Polk. One of the most attractive features of this book is the illuminating account that Mr. Storrs gives of the enterprise shown by these pioneers, and he is at his best when describing how Ticknor, at first distrustful of German scholarship, completely changed his attitude when he came into personal touch with the leading men in the German universities. It is interesting now to note why the Germans of that age seemed to this great Harvard reformer to possess the essentials of a good university education; it was, he said, because of 'the free and philosophic spirit with which they do it, the contempt of all ancient forms considered as such, and the exemption from all prejudice—above all, the universal activity with which they push forward and the high objects they propose to themselves'.

At this period Americans had not acquired the habit of spending generously in the cause of education. Their parsimony crippled university education just as much as it did the provision of education at the elementary level. 'The day of great private benefactions had to wait until enormous personal fortunes became relatively common. Between the Revolutionary and Civil Wars, Harvard received less than a quarter of a million dollars in large gifts . . . although its alumni and friends must have included many of the richest college men in the country.' The reformers were, therefore, constantly hampered and harrassed by problems of finance, but these were by no means their only source of trouble. 'Vested interests' within the colleges were a major bogey, and obstruction of this kind had the effect of making the conception of a separate and distinct institution for postgraduate studies a live issue at a fairly early stage. 'I fear', said Benjamin Pierce, speculating on the prospect of reforms at Harvard, 'that they will meet with the opposition of an uncompromising conservatism, which is disposed to claim for every blockhead, who is a graduate of three years standing, a vested right to the title of master of arts. It will therefore be worthy of consideration whether

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it may not be a better plan to establish a new and independent school for instruction in the higher departments of learning.'

Mr. Storr makes good use of the evidence that he has collected to stress the significance of patriotism as a dynamic in university reform. 'Once political independence was gained, there developed a desire for cultural independence, which found expression in everything from textbook revision through Noah Webster's work on American language to Emerson's *The American Scholar*.' An immediate consequence of political independence was a demand for universities 'comparable to the universities of Europe', or as the President of one of the colleges expressed it, universities of such a kind 'that no youth need cross the ocean to study and learn what ought to be taught much more safely and advantageously at home'. But in spite of their high ambitions and their persistent endeavours the pioneers could hardly claim to have laid the foundations of graduate education, when the anxieties of the Civil War brought their efforts to a halt. 'The seminar', Mr. Storr observes, 'had hardly begun its career. Even research, although frequently mentioned and highly valued, had yet to receive the concentrated attention which later became a distinguishing mark of graduate studies.' On the credit side, however, it can be claimed that these first reformers had created a demand, disclosed the problems, made the initial mistakes, and set the agenda for change and development. 'We begin our work . . .', said Daniel C. Gilman, inaugurating the graduate school of Johns Hopkins University in 1876, 'after costly ventures of which we reap the lessons, while others bear the loss.'

W. O. Lester Smith

Science and Industry in the Nineteenth Century. *By* J. D. Bernal. (Routledge & Kegan Paul, 12*s*. 6*d*.)

Those who saw the special Science Exhibition which was mounted by the Festival of Britain in 1951 (and which, alas, has since been scattered) will recall at the entrance a chart designed by Professor Bernal, in which critical discoveries in science were set out in parallel, by date and by subject. The chart looked an ordinary affair until one had occasion, as I did later, to try to reconstruct some of its inner connexions. Only then did I discover how much penetration had gone into making it. Nothing, I found, looks so simple, and is

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so hard, as adroitly to single out in half a dozen fields the strong thumbprints of the evolution of science, and to see them linked and whole.

In the Introduction to this book, Professor Bernal uses this searching gift again. Here, in thirty-odd pages, he marshals the critical discoveries of the nineteenth century: the new mathematical language; its use by Maxwell to give form to Faraday's concept of the electromagnetic field; the elucidation of the concept of energy in thermodynamics; the entry of atomic models into this subject and into the chemistry of structure; the influence of all these in turning biology into an experimental science; and the other support which biology got from the new understanding of geology as history.

All this Professor Bernal holds together as an intelligible unit. Yet it is the point of his book and of his method that the achievement looks remarkable only so long as it is taken to be an intellectual achievement. The leaps are prodigious, the links are tenuous, only when they are thought of as links in the mind. Instead, it is Professor Bernal's thesis that robust practical forces link one subject to another, by directing the common progress of all. They are the forces of history; and in the nineteenth century, the most powerful of them in Europe was the expansion of industry. Professor Bernal's book is intended to support the general thesis, that the sequence of scientific discoveries becomes orderly and meaningful only in the whole context of history, by the particular proposition that nineteenth-century science was profoundly influenced by the presence and pressure of industry. The book indeed once again proves the general thesis brilliantly, and in doing so, ironically, it decisively disproves the particular proposition.

This proposition is presented in four examples: a chapter on heat and energy, another on ferments and microbes, one on steel, and one on electric current. The subjects therefore exclude the deepest scientific thought of the century, which lies in the work of Darwin, of Maxwell, of Riemann, and (I think) in the evolution of statistical concepts. Even so, the four subjects are of quite unequal weight, for the last two have no content of fundamental science here, and Professor Bernal seems to have included them largely for the pleasure of showing the reluctant masters of traditional industries bullied and beaten by such inventive toughs as Bessemer and Edison.

The examples are to show the broad interplay of science and industry. What they show, however, is that industry sometimes was

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quick and sometimes was slow to stimulate or to exploit the work of scientists, which sometimes was close to and sometimes remote from the preoccupations of the times. Professor Bernal admits this inconclusiveness in his Conclusions: 'what is most apparent in each one of these histories are the contradictions'. By way of explanation, he catches in this inconsequence an echo of the whole economy, its booms and slumps; money is a two-faced master, which prompts industry to be timid and reckless by turns, and makes its assessment of innovations constantly fallible.

But surely this explanation is too artless and, if I may say so, too shallow. Professor Bernal writes exciting history whenever he writes on the grand scale, in his Introduction and Conclusions. His particular examples are inconclusive and without fire: why? Because the method is there out of keeping with the scale. The fine structure of history, like that of matter, cannot be unravelled into mechanical chains of cause and effect.

The problems thrown up by technical development do stimulate scientists, and their solutions in turn open up new applications. But in the nature of things, this is a statistical phenomenon. It stands out clearly in the large perspective of centuries. As we come closer, we see that it is overlaid with unevennesses: resistance to research, academic prejudice against atoms, industrial traditions. And closer still, on the fine scale of Professor Bernal's examples, the trend may be masked by the random fluctuations of accident and personality: the early death of Carnot, Faraday's respect for Humphrey Davy, or nationalism in Lorraine. History is not a machine but a pattern, in which trend and fluctuations are balanced in a way which depends on our scale.

Professor Bernal's examples miss this balance because, in an odd way, they miss the stubbornness of the age, the Victorian awkwardness and the righteous nonconformity of its scientists. Since this tradition is now threatened, it needs to be underlined wherever scientists are warned to be respectable. The dissidence of this man or that is only a surface ripple on the long swell of history, but the dissidence of science as a whole serves by its very roughness to give the wave stability. I am left at the end of Professor Bernal's book with a different respect for the nineteenth century, and with a sense that the scientific concepts which it developed are both more powerful and more personal than we have thought.

J. Bronowski

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The restoration of the institution of slavery and the large-scale practice of murder by the State are among the distinguishing marks of our time. Dachau and Karaganda, Auschwitz and Katyn Wood, the liquidation of European Jewry and the national destruction of the Crimean Tatars and Georgian Chechens, these are the symbols of the established trends in politics. There is certainly a connexion between the problem of totalitarianism and the problems studied by academic political philosophers: sovereignty, political obligation, natural rights, and the rest. But there is still a good deal of discussion of political philosophy which assumes that totalitarianism is a peripheral problem or that totalitarianism is no more than another variant of political absolutism: that Hitler and Stalin inhabit the same universe as Louis XIV and Frederick the Great.

It is one of the great merits of *L'Homme Révolté* of M. Albert Camus that it places the totalitarian problem at the centre of political discussion. His peculiar concern is this. He believes that existence is 'absurd', that is, that for the spectator the universe and human life are without meaning. Meaning is constituted by the act of personal decision; but there is no given set of values in the light of which one decision can be shown to be right, another wrong. Man is alone with his freedom. I may reject the values of the totalitarian society by my own decision; and this will commit me to active opposition to totalitarian policies (otherwise my decision is no genuine decision, I am in 'bad faith'). But does it make sense to give reasons why *others* should make the same decision? Is not this to reinstate values which are *given* and to which my decisions, if they are to be the right ones, *ought* to conform? By a brilliant piece of argument M. Camus tries to show that this consequence need not follow—that we can with consistency condemn totalitarian policies and also derive our values from personal decision. This he does by an analysis of the notion of *rebellion*.

It will be remembered that Cartesian doubt left intact only the *Cogito ergo sum*; but that from this single principle the entire world dissipated by systematic doubt—the existence of God, the immortality of the soul, the truths of mathematics—could be reconstructed by simple inference. *I rebel* is the *Cogito* of M. Camus. That *I rebel* is the only incontestable fact for an experience which finds everything

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absurd; and just as the *Cogito* proved surprisingly fertile, so the incontestable *I rebel* gives us, according to M. Camus, a moral universe and a means of shaking the position of those who base themselves upon some other ground.

> Rebellion arises from the spectacle of the irrational coupled with an unjust and incomprehensible condition. But its blind impetus clamours for order in the midst of chaos, and for unity in the very heart of the ephemeral. It protests, it demands, it insists that the outrage come to an end, that there be built upon rock what until now was written unceasingly upon the waters. Its aim is to transform. But to transform is to act, and to act, nowadays, is to kill while it still does not know if murder is legitimate. Hence it is absolutely necessary that rebellion derive its justifications from itself, since it has nothing else to derive them from. It must consent to study itself in order to learn how to act.

Hitherto the fate of rebellion, as soon as it passes from the individual act of rebellion to the collective act of revolution, has been to deny itself. All successful revolutionaries have maintained that further acts of revolt are inadmissible. One does not reject the Kingdom of Heaven if one finds oneself a subject of it. This is, for M. Camus, a sign that the revolutionaries have not reflected with sufficient seriousness upon the logic of rebellion. Serious reflection upon its logic discloses that there is inseparably connected with the notion of rebellion a further notion, that of *mesure*. By *mesure* M. Camus seems to understand a sense of human fallibility, an awareness of the inevitability of errors and injustices, which give rise to a relative scepticism in thought and moderation in action.

> Man . . . should rectify in creation everything that can be rectified. And after he has done so, children will still die unjustly even in a perfect society . . . the injustice and the suffering of the world will remain and, no matter how limited they are, they will not cease to be an outrage. Dmitri Karamazov's cry of 'Why?' will continue to resound through history; art and rebellion will only die with the death of the last man on earth.

M. Camus has no difficulty in showing that revolutionaries who do not recognize the limits imposed upon thought and action by *mesure* succeed in constructing Hell while they believe themselves to be realizing Heaven. This is the history of all modern revolutions; and while M. Camus—naturally, in view of his presuppositions—can offer no guarantee that totalitarianism will not triumph over the

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whole planet, he seems to believe that his summons to serious reflection upon the concept of rebellion may awaken some response in men of generous mind in western Europe. The difficulty is that many of them will accept the conclusions of *L'Homme Révolté* without finding it necessary to accept the dialectic through which M. Camus comes to his conclusions. They may think there is something wildly paradoxical in the combination of *absurdité* and its subordinate concepts—*engagement*, *mauvaise foi*, *angoisse* and the rest—with the politics of *mesure*, which as recommendations for practice do not differ much from the recommendations of such English political philosophers as Burke and Bagehot. M. Camus is right to place the inhumanity of totalitarian politics at the centre of his field of vision. Totalitarianism can only be accepted or rejected. The fuzzy reaction to it common in this country—the view, for example, that the Soviet Union is 'an interesting experiment', that 'at least the Communists have given China an honest administration', that 'one can understand the *practical* grounds for the encouragement of Lysenko', and so on—represents only a refusal to choose. But it seems extravagant to suppose that the only rational ground for the rejection of totalitarianism is to be found in a moral system within which *I rebel* plays a part analogous to that of the *Cogito* in Cartesian metaphysics.

The English translation of *L'Homme Révolté* is scarcely adequate. It is too often incorrect and ungrammatical. The depths of carelessness are surely touched when one finds a quotation from William Blake translated back into English from the French translation. The French text has not been translated in its entirety, this 'in the interests of economy', so Sir Herbert Read tells us in his Foreword.

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